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Texas A&M International University  
A. R. Sanchez, Jr. School of Business  
Center for the Study of Western Hemispheric Trade

In partnership with

Universidad Autónoma de Tamaulipas  
Facultad de Comercio, Administración y Ciencias Sociales

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20TH ANNUAL  
WESTERN HEMISPHERIC TRADE CONFERENCE  
APRIL 13-15, 2016 | LAREDO, TX, USA

CONFERENCE PROCEEDINGS

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# CENTER FOR THE STUDY OF WESTERN HEMISPHERIC TRADE

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The Center for the Study of Western Hemispheric Trade at Texas A&M International University is a public service institute founded to study globalization with special emphasis on the Western Hemisphere. The Center is a part of the A.R. Sanchez, Jr. School of Business, and it supports the college as well as the entire Texas A&M International University community with its various programs. The Center seeks to increase awareness and knowledge about the Western Hemispheric countries and their economical, political and social interactions. The Center highlights Texas A&M International University and the City of Laredo and promotes education.

## **History**

Since its inception in 1993, the Center has become a valuable resource for joint research and faculty and student exchanges. The Center is a key location for educational entities, businesses and governments to turn to for up to date and relevant information on the Western Hemisphere. The Center provides a forum for international discussion and debate for representatives from countries in the Western Hemisphere regarding issues that affect trade and other economic relations within the Hemisphere. Through its alliance with educational entities, businesses and governments throughout the Hemisphere, the Center offers practical and targeted lectures imparted by visiting faculty, professionals, society leaders and scholars.

## **Focus**

The Center's research focuses on subjects that affect Western Hemispheric Trade, including trade agreements, tariffs, customs, regional and national economies, politics, business development, finance, the environment and culture. The Center's publication, *The International Trade Journal (ITJ)*, is now under the auspices of the International Trade Institute and is a refereed interdisciplinary journal published for the enhancement of research in international trade. Its editorial objective is to provide a forum for the scholarly exchange of research findings in, and significant empirical, conceptual, or theoretical contributions to the field.

## **Mission**

Consistent with the mission of Texas A&M International University and its A. R. Sanchez, Jr. School of Business, the Center for the Study of Western Hemispheric Trade will conduct and promote research on globalization and related topics, with special emphasis on Western Hemisphere, increase awareness and knowledge about the Western Hemispheric countries and their economic, political, cultural and social institutions and development dynamics, and spotlight Texas A&M International University as a key resource of information, research, training and conferences focusing on the Western Hemisphere.

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# WELCOME

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Dear Conference Participant:

Texas A&M International University's (TAMIU) A. R. Sanchez, Jr. School of Business (ARSSB) takes pride in welcoming you to its 20th Annual Western Hemispheric Trade Conference. The Conference is co-sponsored by the Center for the Study of Western Hemispheric Trade in partnership with the Universidad Autónoma de Tamaulipas Facultad de Comercio, Administración y Ciencias Sociales. The Conference is being held April 13-15, 2016 on the campus of TAMIU in Laredo, Texas, USA.

Join us as we welcome three outstanding keynote speakers: Mr. Alfredo Corchado, México Bureau Chief for the Dallas Morning News; Dr. Michael P. Dooley, Professor Emeritus at the University of California, Santa Cruz; and Dr. Morten Jerven, Associate Professor at Simon Fraser University and Norwegian University of Life Sciences. Our panel presentation, "Development Traps and Escaping Developing Traps," features Dr. Victor Menaldo, Associate Professor of Political Science at the University of Washington, and Mr. Aaron Erlich and Mr. Daniel Yoo, Ph.D. candidates from the Department of Political Science at the University of Washington. Dr. William C. Gruben will serve as moderator.

A total of 108 papers will be presented throughout 31 academic sessions, including special sessions for graduate students. Participants of this year's Partial Least Squares (PLS) Applications Symposium will be included in the academic sessions. The PLS Applications Symposium is chaired by Dr. Ned Kock, Killam Distinguished Professor and Chair of the ARSSB's Division of International Business & Technology Studies.

We thank our corporate sponsors for their support: BBVA Compass; C.H. Robinson; Coldwell Banker Ana Ochoa & Company; Commerce Bank; Daniel B. Hastings, Inc.; International Bank of Commerce; Killam Development, Ltd.; Person, Whitworth, Borchers & Morales, L.L.P.; Routledge, Taylor & Francis Group; and Texas Community Bank.

We are pleased to receive you as our guest and participant in this year's Conference and hope that you have a most pleasant and productive stay during your visit to Laredo, Texas. The electronic proceedings for the Conference are available on our website: <http://freetrade.tamiu.edu/>

Sincerely,

R. Stephen Sears  
Dean and Radcliffe Killam Distinguished Professor of Finance  
A. R. Sanchez, Jr. School of Business  
Texas A&M International University

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Texas A&M International University  
20th Annual Western Hemispheric Trade Conference  
April 13-15, 2016 | Laredo, Texas, USA

CONFERENCE AGENDA

WEDNESDAY, APRIL 13, 2016

- 6:30-7 p.m. Welcoming Reception ..... SC Rotunda, 2nd Floor  
**Sponsored by International Bank of Commerce**
- 7-8:30 p.m. IBC Bank Keynote Speaker Series ..... SC Ballroom  
*Still Midnight in México? México's Challenges, Journalism and the Borderlands,  
and the New American Narrative*  
Mr. Alfredo Corchado, México Bureau Chief, *Dallas Morning News*

THURSDAY, APRIL 14, 2016

- 7:30 a.m. Registration Begins ..... SC Rotunda, 2nd Floor
- 7:30-8 a.m. Continental Breakfast ..... SC Rotunda, 2nd Floor  
**Sponsored by Daniel B. Hastings, Inc.**
- 8-9:30 a.m. Concurrent Academic Sessions  
Session 1: Issues in Finance ..... SC 236  
Session 2: Software and Application Development Issues ..... SC 231  
Session 3: Cuestiones en Programación ..... SC 230  
Session 4: Cuestiones en Logística ..... SC 225  
Session 5: Cuestiones de Desarrollo Económico y Finanzas ..... SC 120
- 9:30-9:45 a.m. Break & Refreshments ..... SC Rotunda, 2nd Floor  
**Sponsored by Routledge, Taylor & Francis Group**
- 9:45-11:45 a.m. Concurrent Academic Sessions  
Session 6: Issues in Business and Economics (Ph.D. Student Presentations) ..... SC 236  
Session 7: Issues in Economics ..... SC 231  
Session 8: Issues in Management ..... SC 230  
Session 9: Western Hemispheric Trade Issues ..... SC 225  
Session 10: Cuestiones Jurídicas ..... SC 120
- 11:45-12 noon Break
- 12-1:45 p.m. Luncheon Keynote Address ..... SC Ballroom  
**Sponsored by Commerce Bank**  
*Will China Trigger the Next International Financial Crisis?*  
Dr. Michael P. Dooley, Professor Emeritus, University of California, Santa Cruz

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## CONFERENCE AGENDA (CONT.)

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### THURSDAY, APRIL 14, 2016 (CONT.)

- 1:45-2 p.m.      **Break**
- 2-3:30 p.m.      **Panel Presentation**..... SC 236  
*Development Traps and Escaping Development Traps*  
Dr. Victor Menaldo, Associate Professor of Political Science, University of Washington  
Mr. Aaron Erlich, Ph.D. Candidate, Department of Political Science, University of Washington  
Mr. Daniel Yoo, Ph.D. Candidate, Department of Political Science, University of Washington  
Moderator: Dr. William C. Gruben, Adjunct Professor, Southern Methodist University
- 3:30-3:45 p.m.      **Break & Refreshments** ..... SC Rotunda, 2nd Floor  
**Sponsored by Coldwell Banker Ana Ochoa & Company**
- 3:45-5:15 p.m.      **Concurrent Academic Sessions**  
Session 11: Issues in Finance and Law (Ph.D. Student Presentations) ..... SC 236  
Session 12: Regional and Global Business Issues ..... SC 231  
Session 13: Issues in Trade and Development I ..... SC 230  
Session 14: PLSAS I: Undergraduate Data Analytics ..... SC 225  
Session 15: Cuestiones en Comercio y Logística ..... SC 203C  
Session 16: Temas de Negocios Regional y Global ..... SC 120  
Session 17: Management Information Systems I (Master's Student Presentations) ..... WHTC 111
- 6:30-8:30 p.m.      **Reception & Dinner** ..... Killam Library, Front Lawn  
**Sponsored by Texas Community Bank**

### FRIDAY, APRIL 15, 2016

- 8 a.m.              **Registration Continues**..... SC Rotunda, 2nd Floor
- 8-8:30 a.m.      **Continental Breakfast** ..... SC Rotunda, 2nd Floor  
**Sponsored by Killam Development, Ltd.**
- 8:30-10:15 a.m.      **Concurrent Academic Sessions**  
Session 18: Issues in Trade and Development II..... SC 236  
Session 19: Latin American Business Issues ..... SC 231  
Session 20: Cuestiones en Administración..... SC 230  
Session 21: Cuestiones en Educación..... SC 225  
Session 22: Temas en Negocios Internacionales y Mercadotecnia..... SC 203C  
Session 23: Cuestiones de Pequeña y Mediana Empresas ..... SC 120  
Session 24: Management Information Systems II (Master's Student Presentations) ..... WHTC 111
- 10:15-10:30 a.m.      **Break & Refreshments** ..... SC Rotunda, 2nd Floor  
**Sponsored by BBVA Compass Bank**
- 10:30-11:15 a.m.      **BBVA Compass Bank Chair Presentation**..... SC 236  
*Foreign Banks in Developing Countries*  
Dr. George R.G. Clarke, Distinguished Associate Professor, BBVA Compass Bank  
Group Chair, Texas A&M International University

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## CONFERENCE AGENDA (CONT.)

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### FRIDAY, APRIL 15, 2016 (CONT.)

- 11:15-11:30 a.m. **Break & Refreshments** ..... SC Rotunda, 2nd Floor  
**Sponsored by Person, Whitworth, Borchers & Morales, L.L.P.**
- 11:30-1 p.m. **Concurrent Academic Sessions**
- Session 25: Global Economic Issues ..... SC 236
  - Session 26: Issues in Marketing ..... SC 231
  - Session 27: Environmental Business Issues..... SC 230
  - Session 28: PLSAS II: Multidisciplinary Research Applications..... SC 225
  - Session 29: Cuestiones Sobre el Medio Ambiente..... SC 203C
  - Session 30: Cuestiones del Medio Ambiente y Negocios Globales ..... SC 120
  - Session 31: Management Information Systems III (Master's Student Presentations).... WHTC 111
- 1-2:30 p.m. **Luncheon Keynote Address** ..... SC Ballroom  
**Sponsored by C.H. Robinson**
- Africa: Why Economists Get It Wrong*  
Dr. Morten Jerven, Associate Professor, Simon Fraser University &  
Norwegian University of Life Sciences
- 2:30-3 p.m. **Concluding Ceremonies & Announcement of Best Student Paper Awards**..... SC Ballroom
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**“Foreign Banks in Developing Countries”**

Friday, April 15, 2016 | BBVA Compass Bank Presentation | 10:30 a.m.

**George R. G. Clarke, Ph.D.**

BBVA Compass Bank Group Distinguished Chair of International  
Economics and Finance, Texas A&M International University

**About the Speaker**

Dr. George R. G. Clarke is the BBVA Compass Bank Group Distinguished Chair of International Economics and Finance at the A. R. Sanchez, Jr. School of Business, Texas A&M International University. He is currently the editor of *The International Trade Journal* and is the interim director of the Center for the Study of Western Hemispheric Trade.

His academic research focuses on privatization and competition in banking and infrastructure and on the impact of corruption on firm performance and growth. He has published 40 papers in academic journals and books including in the *Journal of Development Economics*, *Journal of Public Economics*, *Journal of Comparative Economics*, *Journal of Money, Credit and Banking*, and *Journal of Law and Economics*. Before joining Texas A&M International University, he was a senior private sector development specialist at the World Bank. While at the World Bank, he worked in the Africa Region, the Europe and Central Asia Region, and the Development Research Group. He was also one of the core team members that wrote the *2005 World Development Report: A Better Investment Climate for Everyone*.

He received his Ph.D. in Economics from the University of Rochester and his BA in Mathematics and Economics from Cornell University.



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“Still Midnight in México? México’s  
Challenges, Journalism and the Borderlands,  
and the New American Narrative”

Wednesday, April 13, 2016 | IBC Keynote Speaker | 7 p.m.

**Alfredo Corchado**

México Bureau Chief, *Dallas Morning News*

**About the Speaker**

Alfredo Corchado was born in Durango, México, grew-up as a migrant worker in California, and later moved to Texas. He is a 1984 graduate of El Paso Community College, a 1987 graduate of the University of Texas at El Paso, and a 2008-2009 Nieman Fellow at Harvard University.

Corchado has worked for the *Dallas Morning News* since 1994. As México Bureau Chief, he covers U.S. policy in Latin America, specializing in México. He has also worked for the *Dallas Morning News* in Washington and has covered Cuba. Before joining the *News*, Corchado worked in public radio on the border, the *Ogden Standard-Examiner* in Utah, the *El Paso Herald-Post*, and *The Wall Street Journal* in Dallas and Philadelphia. His work has also been published in *The New Yorker*.

His reporting has earned him several awards including the prestigious Maria Moors Cabot Prize presented by Columbia University and the Elijah Parish Lovejoy Award presented by Colby College. He was a finalist for a Center for Public Integrity award in Washington for his reporting on Ciudad Juárez and the rise of a Mexican paramilitary group known as the Zetas.

Corchado is a leading reporter on immigration and national security issues, particularly the drug-related violence that threatens México’s national security and border communities. He has spoken about the issue in several international forums in Norway, West Africa, Great Britain, Canada, Sweden, South America, México, and the United States.

He served as a 2010 scholar at The Woodrow Wilson Center in Washington and as 2011 visiting fellow at the David Rockefeller Center at Harvard. His nonfiction book, *Midnight in Mexico*, was released in May 2013 and its movie rights optioned by Canana films.

He is currently the Walter Cronkite School of Journalism director of the Borderlands Program at Arizona State University. Corchado lives in Mexico City, but calls the border home.



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**“Will China Trigger the Next  
International Financial Crisis?”**

Thursday, April 14, 2016 | Luncheon Keynote Address | 12 noon

**Michael P. Dooley, Ph.D.**

Partner, Drobny Global Advisors &  
Professor Emeritus, University of California, Santa Cruz

**About the Speaker**

Michael Dooley is a partner at Drobny Global Advisors and Professor Emeritus at the University of California, Santa Cruz. He is a research associate of the National Bureau of Economic Research and a managing editor of the *International Journal of Finance and Economics*. He previously held positions at the Federal Reserve Board’s International Division, the Research Department of the International Monetary Fund and Deutsche Bank.

His published research covers a wide range of issues in open economy macroeconomics including work on global imbalances, Bretton Woods II, crises in emerging markets, debt restructuring, and capital flight.

Professor Dooley received his Ph.D. from Pennsylvania State University.

**About the Lecture**

The role of China in the world economy has become a key issue in the outlook for growth and financial stability in the US and the rest of the world. In this presentation, I will briefly update the data and the debate over international imbalances, exchange rates and capital flows. In particular, the fear of a hard landing for China remains a powerful force in international capital markets. I will argue that China’s “landing” will depend on how well or badly the authorities manage the exchange rate and reform of the domestic and financial system and capital controls.



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**“Development Traps and  
Escaping Development Traps”**

Thursday, April 14, 2016 | Panel Presentation | 2 p.m.

**Aaron Erlich, Ph.D. candidate**

Department of Political Science, University of Washington

**About the Panelist**

Aaron Erlich is a Ph.D. candidate in the Department of Political Science and an affiliate of the Center for Statistics and the Social Sciences at the University of Washington. As of August of 2016, he will be an Assistant Professor in the Department of Political Science at McGill University in Canada.

His research addresses core theoretical, empirical, methodological, and policy questions related to increasing both public confidence in and procedural integrity of democratic processes and institutions in developing countries. The substantive questions his work addresses include how uncertainty about election outcomes shapes citizens' attitudes and behaviors, how provision of political information impacts citizens' perceptions of regimes' legitimacy, which strategies politicians use to manipulate information, and what the interplay is between increased transparency and political competition. Erlich investigates these critical questions in the context of developing and fragile democracies in the Caucasus, sub-Saharan Africa, and México. Methodologically, his work utilizes lab-in-the-field experiments, household surveys and survey experiments, machine-learning, development engineering, and ethnography.

Erlich's emergent book project explores how citizens and elites use and strategically employ information about politics, specifically public opinion polls and pre-election forecasts, in uncertain electoral environments. He tackles other elements of his research agenda in published or forthcoming work in the *American Political Science Review* and *Comparative Political Studies*.

Prior to beginning his Ph.D., Erlich was the Deputy Director of the Caucasus Research Resource Centers and a Program Officer for the National Democratic Institute in Kenya.



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**“Development Traps and  
Escaping Development Traps”**

Thursday, April 14, 2016 | Panel Presentation | 2 p.m.

**William C. Gruben, Ph.D.**

Adjunct Professor of Economics, Southern Methodist University

**About the Moderator**

William C. Gruben is an adjunct professor of economics at Southern Methodist University’s Dedman College of Humanities & Sciences in Dallas, Texas. He teaches graduate and undergraduate courses in econometrics.

Before retiring from Texas A&M International University (TAMIU), he served as the Radcliffe Killam Distinguished Professor of Economics, as the director of the Ph.D. Program in International Business at the University’s A. R. Sanchez, Jr. School of Business, and as interim-director of the University’s Center for Western Hemispheric Trade.

Prior to his work at TAMIU, he was Vice-President and Senior Economist at the Federal Reserve Bank of Dallas and Director of the Bank’s Center for Latin American Economics. He continues to serve the Federal Reserve Bank of Dallas as Research Associate at its Globalization and Monetary Policy Institute.

He holds a Ph.D. in Economics from The University of Texas, where he was on the research staff at the Lozano Long Institute for Latin American Studies, as well as at the University’s Center for Economic Development. He has published numerous articles in scholarly and technical journals on economic relations between México and the United States - and more generally on topics in finance, business cycles, economic growth and trade as they apply to developing countries.



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**“Africa: Why Economists Get It Wrong”**

Friday, April 15, 2016 | Luncheon Keynote Address | 1 p.m.

**Morten Jerven, Ph.D.**

Associate Professor, Simon Fraser University &  
Norwegian University of Life Sciences

**About the Speaker**

Morten Jerven is an economic historian with a Ph.D. from the London School of Economics and, since 2009, has been working at the School for International Studies at Simon Fraser University in Vancouver, Canada. Jerven was appointed Associate Professor in International Relations and Global Change at Norwegian University of Life Sciences in 2015.

Since the publication of "Poor Numbers: How We Are Misled by African Development Statistics and What to Do about It," he has published a more detailed study of what happened to economic growth evidence in Botswana, Kenya, Tanzania, and Zambia from 1965 to 1995. Even more recently, he edited "Measuring African Development: Past and Present," along with a special issue in the *Journal of Development Studies* on the African Statistical Tragedy. His latest book, *Africa: Why Economists Get It Wrong*, was published in June 2015.

You can find more material at [www.mortenjerven.com](http://www.mortenjerven.com)

**About the Lecture**

Not so long ago, Africa was being described as the "Hopeless Continent." Recently, though, talk has turned to Africa Rising™, with enthusiastic voices exclaiming the potential for economic growth across many of its countries. What, then, is the truth behind Africa's growth, or lack of it?

In *Is Africa Rising?*, Morten Jerven fundamentally reframes the debate, challenging mainstream accounts of African economic history. Whilst for the past two decades experts have focused on explaining why there has been a "chronic failure of growth" in Africa, Jerven shows that most African economies have been growing at a rapid pace since the mid-90s. In addition, African economies grew rapidly in the 1950s, the 1960s, and even into the 1970s. Thus, African states were dismissed as incapable of development based largely on observations made during the 1980s and early 1990s. The result has been misguided analysis and few practical lessons learned.

This lecture aims to be an essential account of the real impact economic growth has had on Africa, and what it means for the continent's future.



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**“Development Traps and  
Escaping Development Traps”**

Thursday, April 14, 2016 | Panel Presentation | 2 p.m.

**Victor Menaldo, Ph.D.**

Associate Professor of Political Science, University of Washington

**About the Panelist**

Victor Menaldo is an associate professor of political science at the University of Washington and an affiliated faculty of the Center for Statistics and the Social Sciences, Near and Middle Eastern Studies, and the Center for Environmental Politics.

He has published, or has forthcoming articles, in the *American Political Science Review*, the *American Journal of Political Science*, *The Journal of Politics*, the *British Journal of Political Science*, the *Annual Review of Political Science*, *Comparative Political Studies*, *World Politics*, *Comparative Politics*, *International Studies Quarterly*, *Economics and Politics*, *Political Science Quarterly*, and *Policy Sciences*. He has also penned op-eds in *The New York Times*, *The Wall Street Journal*, *The Washington Post*, *USA Today*, *Foreign Policy*, and *The Seattle Times*.

**About the Panel**

What explains political and economic underdevelopment—and how countries either become ensnared in development traps or have managed to escape them? This Panel investigates several possibilities. In terms of entering development traps, one possibility is that weak states with low capacity turn to crony capitalism, financial repression, policies with a sharp urban bias, and the plundering of their natural resource sectors to generate quick and easy revenues when they cannot count on a diversified and vibrant economy because they lack the rule of law and professional and competent tax bureaucracies. We also explore if underdevelopment is a byproduct of political failures, and most specifically political capture by the rich and special interests. Finally, we outline an explanation about how to improve development outcomes through political incumbents' strategic reform of the bureaucracy and the adoption of measures that improve transparency.





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**“Development Traps and  
Escaping Development Traps”**

Thursday, April 14, 2016 | Panel Presentation | 2 p.m.

**Daniel Yoo, Ph.D. candidate**

Department of Political Science, University of Washington

**About the Panelist**

Daniel Yoo is a graduate student in the Department of Political Science at the University of Washington. He specializes in the political economy of finance, with research interests in the politics of financial regulation and state-owned banking. He is also actively involved in several projects with the World Bank. His work has been published in *World Politics*, and he obtained his Bachelor of Commerce from the University of Toronto and Master of Arts from the University of Chicago.

**About the Panel**

What explains political and economic underdevelopment—and how countries either become ensnared in development traps or have managed to escape them? This Panel investigates several possibilities. In terms of entering development traps, one possibility is that weak states with low capacity turn to crony capitalism, financial repression, policies with a sharp urban bias, and the plundering of their natural resource sectors to generate quick and easy revenues when they cannot count on a diversified and vibrant economy because they lack the rule of law and professional and competent tax bureaucracies. We also explore if underdevelopment is a byproduct of political failures, and most specifically political capture by the rich and special interests. Finally, we outline an explanation about how to improve development outcomes through political incumbents' strategic reform of the bureaucracy and the adoption of measures that improve transparency.



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# Corporate Ownership Structure and Board Composition: Evidence from Taiwan

KEN HUNG<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*Previous studies investigating the determinants of board composition have mostly focused on the relationship between managerial ownership and outside directors. Like most developing economies in East Asia, Taiwan is dominated by family-controlled firms. Family control can potentially give rise to principal-principal conflicts, leading to wealth expropriation from minority shareholders by family owners. Using a sample of Taiwanese publicly listed companies from 2005 to 2012, we employ the ordered-probit, fixed-effects, and random-effects regression models to examine the impact of corporate ownership structure on board composition, and focus primarily on the association between family ownership and outside directors. Our study finds that the proportion of outside directors is negatively related to family ownership and is positively related to institutional ownership. These results suggest that the ownership structure of firms has an important influence on board composition that should be considered by researchers and regulators.*

*KEYWORDS*    *board composition, ownership structure, corporate governance*

*JEL*    *G32, G34*

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<sup>1</sup> Address correspondence to Ken Hung, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd., Laredo, TX 78041, USA. E-mail: [ken.hung@tamiu.edu](mailto:ken.hung@tamiu.edu)

# The Readability of a Partner's Annual 10-K Report and the Ex-Ante Perception of a Strategic Alliance's Success

MUFADDAL BAXAMUSA  
*University of St. Thomas*  
*Minneapolis, Minnesota, USA*

ABU JALAL  
*Suffolk University*  
*Boston, Massachusetts, USA*

ANAND JHA<sup>1 2</sup>  
*A.R. Sanchez, Jr. School of Business, Texas A&M International University*  
*Laredo, Texas, USA*

*We investigate the association between the readability of a partner's annual 10-K report and the ex-ante perception of a strategic alliance's success. We find that when a partner has a less readable 10-K report, the increase in the cumulative abnormal return around the announcement of the alliance is relatively lower—suggesting that investors discount partnerships with firms that have less readable 10-K reports. Additional tests show that the adverse impact of the poor readability is much worse when the partner is from a different industry. Further, we find that the impact is worse for all alliances that occurred before the Sarbanes Oxley Act. We also find that an announced alliance is unlikely to come to fruition if the partner's 10-K report is less readable at the time of announcement. Overall, our study suggests that the readability of annual reports might affect the market perception of an alliance's success, and possibly its real success. Our results are based on examining 1,870 strategic alliances that occurred between 1995 and 2012.*

**KEYWORDS**    *Strategic Alliance, Readability, 10-Ks, Annual Reports*

**JEL**    *G02, G32, G14, M41*

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<sup>1</sup> Address correspondence to Anand Jha, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd., Laredo, Texas 78041, USA. E-mail: [ajha@tamiu.edu](mailto:ajha@tamiu.edu)

<sup>2</sup> We thank all of the participants in the seminar series at Texas A&M International University. We thank Feng Li for making the data on the readability of 10-Ks publically available on his website. We also thank Matteo Arena, Christopher Boudreaux, George Cashman, George Clarke, Sudip Datta, Ranjan D'Mello, Mai Iskandar-Datta, Manoj Kulchania, Bing-Xuan Lin, Wu-Lung, Nga Nguyen, Sarah Peck, John Wagster, and Chunlai Ye for their valuable feedback.

# **Not Every Merger is Created Equal: Differential Stock Market Reaction to Various Types of Mergers**

YURIY BOTS<sup>1</sup>  
*William Jewell College  
Liberty, Missouri, USA*

VUSAL EMINLI  
*University of the Pacific  
Stockton, California, USA*

*Merger and acquisition decisions can have a significant impact on company's market valuation. This paper uses Compustat database to estimate stock market reaction to different types of mergers. We find evidence that for low competition industries mergers of purely manufacturing firms with other pure manufacturing firms generate positive abnormal stock market returns. A merger of purely service firms in less competitive markets results in negative abnormal stock market returns. These results suggest that market reaction tends to differ systematically based on the types of mergers companies engage in. Diversification and economies of scale arguments are proposed as possible explanations for observed market reaction.*

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<sup>1</sup> Address correspondence to Yuriy Bots, William Jewell College, Liberty, Missouri 64068, USA.  
E-mail: [botsy@william.jewell.edu](mailto:botsy@william.jewell.edu)

# Software Development: Offshoring Trends in Vietnam

DR. MINH BUI<sup>1</sup>

*College of Business, University of Houston - Downtown  
Houston, Texas, USA*

DR. RUTH ROBBINS

*College of Business, University of Houston - Downtown  
Houston, Texas, USA*

*This study examines the differences in Vietnam's software development offshoring competitiveness between the years 2010-2015, using an adaptation from Michael Porter's diamond model theory. This research examines the country's competitive movements in (a) Government vision and policy, (b) ICT Industry's global maturity, (c) ICT, (d) Wages, and (e) Human Capital, as they pertain to offshore software development. Data from the World Bank, IMF, and United States Census Bureau are aggregated quantitatively to describe changes during this time span. The findings are relevant for Western organizations looking to partner with Vietnam for software development purposes.*

---

<sup>1</sup> Address correspondence to Dr. Minh Bui, Adjunct Professor in Finance, Accounting & Enterprise Information Systems Department, College of Business, University of Houston – Downtown, 320 North Main Street, Houston, Texas 77002-1001, USA. E-mail: [buim@uhd.edu](mailto:buim@uhd.edu)

# Development of a Mobile Application to Help Improve Math Skills Using Augmented Reality

R.A. DÍAZ-VALLADARES<sup>1</sup>  
*Universidad de Morelos  
Morelos, Nuevo León, México*

EDER MARTÍNEZ  
*Universidad de Morelos  
Morelos, Nuevo León, México*

CYNTHIA GARCÍA  
*Universidad de Morelos  
Morelos, Nuevo León, México*

CARLOS MONDRAGÓN  
*Universidad de Morelos  
Morelos, Nuevo León, México*

A. PÉREZ-SOLTERO  
*Universidad de Sonora  
Hermosillo, Sonora, México*

*Mexico has a significant lag in the basic science fields, this was demonstrated by the PISA test conducted in 2012. The test results showed that in Mexico 55% of the 15 years old students do not reach the basic skills level, that is 4% more than the 2003 estimation. The game based learning is an innovative approach to learn through recreational activities including educational values, this could support learning by improving education and a better student evaluation. Augmented Reality is a technology concept within Mixed Reality field, where virtual objects are added to real objects, resulting on real and virtual environments mix. This project integrates both concepts resulting in a mobile application to improve math teaching at elementary grades in Mexican schools.*

**KEYWORDS**    *augmented reality, game-based-learning, education, mathematics.*

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<sup>1</sup> Address correspondence to R.A. Díaz-Valladares, Chief of Research and Innovation at Morelos University, Avenida Libertad Poniente 1300 Poniente, Zaragoza, 67530 Morelos, Nuevo León, Mexico.  
E-mail: [izacarias@um.edu.mx](mailto:izacarias@um.edu.mx)

## INTRODUCTION

Technology and its development has opened new possibilities and innovation tools to support many different fields including education. From a sociological approach, new infants generations are considered highly technological, this is the main reason why technology tends to have a strong impact on development.

The National Council of Teachers of Mathematics (NCTM, 2000) establish that technologies should support students to explore and discover new concepts, as well as moving them from abstract mathematical ideas to more concrete experiences.

Augmented Reality (AR) is one of the latest technologies that are still on development. This technology allows overlapping objects and computer real-time image animation using a camera, unlike virtual reality. AR is a technology that complements the perception and interaction with a real world enabling the user to interact within some augmented environment by computer generated information.

The main purpose is to develop a mobile application and generate information to provide the teacher some decision-making capabilities that are based on popularized data since the 1980s and 1990s. These ideas have been evolved into a much more sophisticated concept known as Big Data.

## METHOD DESCRIPTION

RAMath is a multiplatform application that combines the concepts of game based learning, game development technologies and pattern recognition techniques, offering an interactive tool to reinforce Math concepts. In addition it records performed Math operations done by the user while using this application, then they're sent to a database system to store information to be distributed later by an open data format for better distribution.

The new concepts and technologies integrated into this project are the following:

On education grounds, AR technology has gained many followers by its ability to overcome differences and for achieving more tangible learning approaches. The student-centered activities are enhanced by the integration of both real and the virtual worlds to the experience. This is so because it provides the ability to overlay images, texts, video/audio components and existing spatial images (Antonioli, Blake y Sparks, 2014).

The game-based learning is a concept where teaching and recreational components are mixed, in other words it combines gaming goals and learning objectives (Gunter, Kenny y Vick, 2008 y Ke y Abras, 2012). The game purpose should be appointed to get student's attention by encouraging their participation on gaming based learning activities (Alessi & Trollip, 2001). On a gaming room, people participate in activities such as identifying problems, making hypotheses, and reflective thinking (Maertens et al., 2014).



Open Data is a content that can be used, reused and redistributed freely by anyone (<http://opendefinition.org/>). This content is amenable to the requirements of attribution and/or shared in the same way it was originally published without copyright restrictions, patents, nor some other control mechanisms (Offenhuber and Ratti, 2014). The increase access and knowledge sharing, facilitate opportunities for economic and social development, intercultural dialogue, and to motivate innovative potentials. (Cabrera Flores Serrano and Vidauri Moon, 2014).

## Application Architecture

Software architecture is an important factor on system development, since it depends on easiness to add new modules and to achieve efficient maintenance practices.

Raymond (2003) remarks that a good practice in software development is to implement rules in the Front End and mechanisms at the Back End.

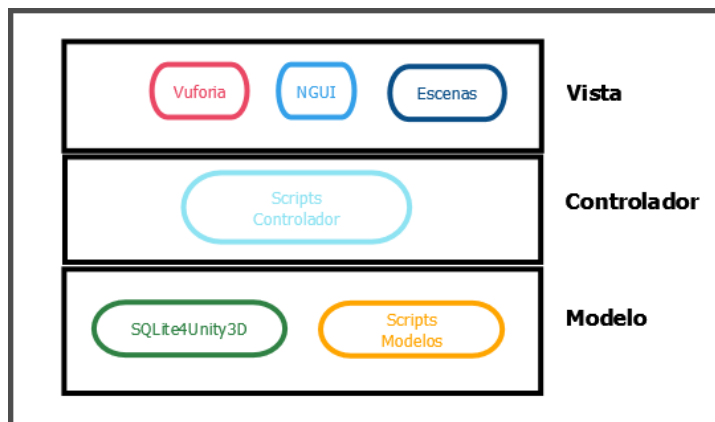
On this project the MVC (Model-View-Controller) architecture is implemented as appointed. The MVC pattern divides the application components on three levels as described below:

**Model:** The business logic, in other words, is a layer that contains the required application data.

**View:** The interfaces that will interact with the user, receives and sends information.

**Controller:** Reacts to requests the customer performs, executing the correct action.

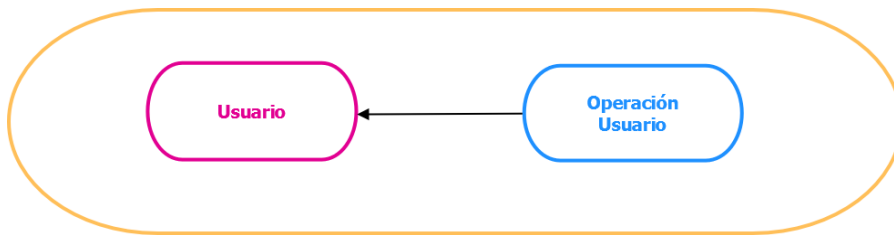
MVC diagram as implemented on RAMath is shown in Figure 1.



**Figure 1.** General architecture for RAMath application.

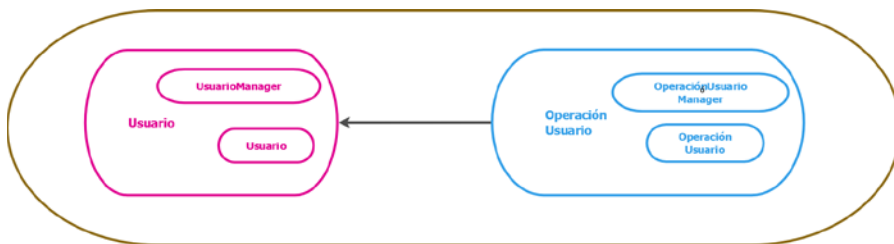
## Model

The Model component is the basic level for the application made by the components that are described in Figure 2.



**Figure 2.** Components which integrate the Model.

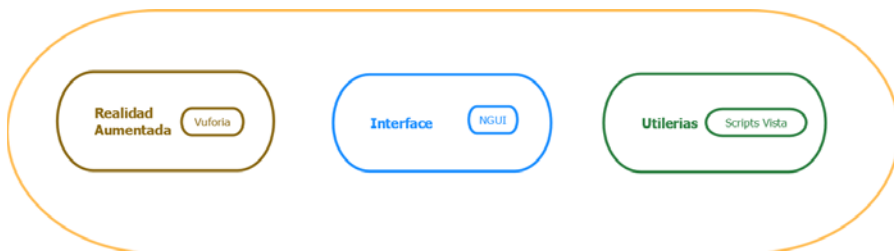
Each of these components are made of two classes, one class works as data container and the other is applied for data management. This relation is described in Figure 3.



**Figure 3.** Main application classes.

## View

Figure 4 shows the diagram for technologies that were implemented on the View layer.



**Figure 4.** Components of View layer.

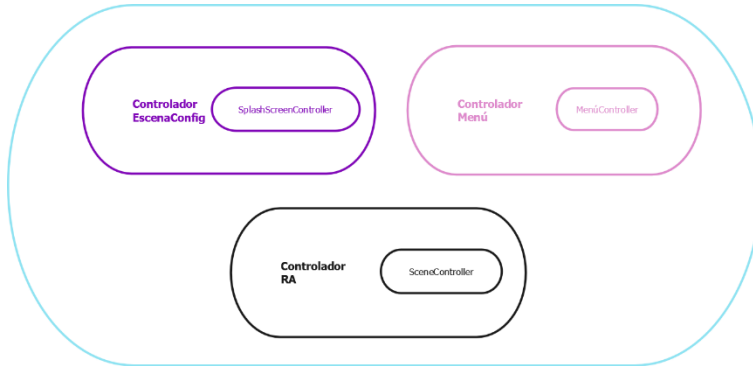
The final prototype is composed by three main scenes: (a) 00-SplashScreen, (b) 01-Menú y (c) 02-AR. Figure 5 shows each scene and its structure.



**Figure 5.** Application scenes.

## Controller

The Controller is integrated by the scripts that execute the process described in the Model, and shows the user interaction results the user gets by View component. Figure 6 describes that there is a controller for each scene, each controller is made out of a script that calls to the Model component, and execute scripts that perform specific tasks.



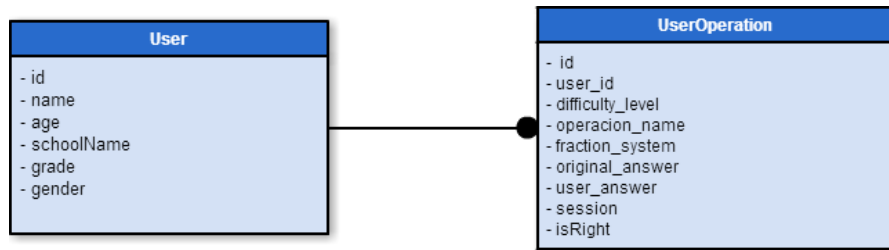
**Figure 6.** Controller-Script relation.

## Database

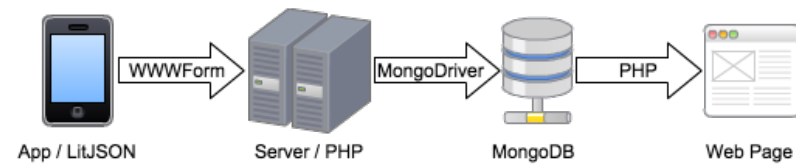
According to the application requirements and considering the magnitude of the project, it was observed that the implementation of a database is a necessity. It was decided then to use the SQLite database because it is a free software tool that stores information on mobile devices with small amount of storage in a simple and effective way. The main platforms where SQLite is operating are: (a) Windows Vista and Windows 7 (b) Mac OSX, (c) and Linux (d) Symbian.

The database consists of two tables: User and UserOperation. The User table contains the personal profile student's information. In the table UserOperation the operation type resolved by the student is stored (sum of fractions, subtract fractions etc.), with its given and its correct answers. For a better structure of database understanding, the entity-relationship diagram is described in Figure 7.

The application has an information processing feature, where the above database mentioned, is exported in JSON format using the library for C # LitJSON, which is responsible for preparing tables to be sent by POST method using the WWWForm tool from Unity3D. On the server side, the database in JSON format is manipulated and inserted into a database MongoDB data through PHP scripts using their respective MongoDB-PHP driver. This data is displayed on the project website as Open Data for future statistical studies. Figure 8 shows a summary of information processing feature.



**Figure 7.** Entity-relationship diagram.



**Figure 8.** Information processing.

## CONCLUDING REMARKS

Logical mathematical ability is crucial for student development, this to the point that is one of the most important assessed variables in all education systems and assessment tests in countries that are OECD members. It is important to create new tools to diversify the studying methods for the current generation, characterized by digital natives individuals immersed into a world focused on the virtual, digital and computer technologies.

## Results

The final result was a cross-platform mobile application that managed the integration of existing technologies like Augmented Reality on electronic devices for the mathematics learning at elementary levels (see Appendix).

An important feature of this project is to be connected to a central server, allowing to find relationships, possible errors, solution routes, most difficult issues to students, and learning gaps among other situations. On its best version, the system will be capable to display statistically significant information to school authorities to estimate learning strengths and weaknesses massively, then allowing to focus on strategies that may be applied with greater efficiency. This project execution was integrated by a multidisciplinary team of developers, designers, and educators.

## Conclusions

The application can improve several facets and achieves the main purpose of developing a multiplatform application showing topics in more attractive ways using gaming technologies to

encourage student participation in Mathematical learning cognitive processes. Collected data from students using the application will be stored on a central server for further analysis to develop better learning strategies.

### Recommendations

Researchers with interest on this project further development may consider interactive content creation to strengthen the current implementation issues. They can also research to improve Math teaching strategies based on the information stored on the server.

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APPENDIX



# Development of an Application Based on Kinect Sensor as a Physical Therapy Diagnosis Tool

R.A. DIAZ-VALLADARES<sup>1</sup>  
*Universidad de Morelos  
Morelos, Nuevo León, Mexico*

D. DUARTE-DYCK  
*Universidad de Morelos  
Morelos, Nuevo León, Mexico*

A. GUILLEN PERALTA  
*Universidad de Morelos  
Morelos, Nuevo León, Mexico*

G. ROMO CÁRDENAS  
*Universidad de Morelos  
Morelos, Nuevo León, Mexico*

R. RODRIGUEZ ANTONIO  
*Universidad de Morelos  
Morelos, Nuevo León, Mexico*

L. CALLORDA-FEDECZKO  
*Universidad de Morelos  
Morelos, Nuevo León, Mexico*

*Cyber Physical Systems (CPS) integrates computer systems and communication capabilities for monitoring and controlling physical systems through hardware and embedded systems. These CPS consider methods and technologies whose scope have applications on medical and biological fields. A particular application of CPS is focused to the physical rehabilitation field, where many efforts have been made using the Microsoft Kinect to detect 3 dimensional objects and spaces.*

*Morelos University Interphases Lab has develop the Environment Tracking, Measurement and Analysis of Skeletal Data system (ETMASD), whereby using the Kinect within a MATLAB background, this can enable measurements of body joints, distances between them, and 3 dimensional space body positioning. This article describes the advances on the development of this computer application for the assessment of anatomical pathology diagnosis.*

**KEYWORDS** *Cyber-physical systems, Physical Therapy and Rehabilitation, Kinect, Neck Shaft Angle.*

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<sup>1</sup> Address correspondence to R.A. Díaz-Valladares, Chief of Research and Innovation at Morelos University, Avenida Libertad Poniente 1300 Poniente, Zaragoza, 67530 Morelos, Nuevo León, Mexico.



## INTRODUCTION

Technological development is a constant nowadays, therefore the increased use of computer systems through many different fields over the last two decades. Computer science provided a unique platform for human interactions; plus the gathering, interpretation and storage of data performed by different devices which are expanding the possibilities of predetermined systems, thus enhancing a huge expanding and updating system to satisfy user needs.

On the medical field, computer assistance has been very useful to improve techniques, to find solutions for problems that could not be planted before, therefore enabling speeding up processes otherwise so tedious and time-consuming.

This century second decade has been characterized by a significant increase of technological uses in most human life facets. Nevertheless health science has taking significant benefits from technological advances.

Cyber Physical Systems (CPS), using hardware and embedded systems gather communications and computer capabilities by monitoring and controlling physical systems (Baheti and Gill, 2011; Lee, 2008). CPS methods and technology have applications that are just beginning to be applied on medical and biological fields. (Suh et.al, 2013).

A particular application of CPS is focused to the physical rehabilitation field, where many efforts have been made using the Microsoft Kinect to detect 3 dimensional objects and spaces. The Kinect sensor has opened a path to the development of many applications in different areas. That is the case of medical and health fields, which are improving by the body noninvasive capture of movements that have been used in the patient diagnosis and rehabilitation (Google Patents, 1972).

Clinical examination is essential for injuries and structural malformation diagnosis; however, technological tools are used on diagnosis to make it more substantial and understandable for patients. On medical field, radiology and imaging are employed to acquire a visual image of irregularities located within body structures and bone positions.

Technology in these fields is a constant, another example is the computer-aided diagnosis (CAD), nowadays one of the major research topics in medical imaging and diagnostic radiology (Coto, 2003).

On Physical Therapy and Rehabilitation most achievement assessments are performed by the clinician through direct check up; diagnosis is performed through imaging techniques and medical devices to acquire postural data assessing which ones are the general or angle measurements, and to compare the body silhouette shapes on a grid background.

Even though these techniques have been around for some time, the diagnosis is closely related to the evaluator experience with many factors as it relies on, this enables the clinician searching whether there is a problem or not, but this is not sufficient to the degree of problem intensity, neither indicates the very affected area.

Recent use of diagnostic tools and methods such as radiology and imaging to assist health professionals improving diagnosis has been observed and approved as useful tools for providing a starting point to improve, and to consolidate a diagnosis.

Radiography has been a useful diagnostic tool on Rehabilitation and Physical Therapy fields for more than 30 years; recalling an example, to diagnose the hip structure pathology and femur structure deformities closely related to the neck shaft angle, measurement data of the angles is obtained to determine hip deformations (coxal dysplasia) such as coxa valga or vara coxa (Alvarez, 2010). These hip deformations increase weight pressure, which wreaks damage signs appearance. As an illustration: for example when the load on a joint in coxa valga while walking is between 10 to 20 times higher than normal, it increases possibilities to develop hip osteoarthritis 20 to 30 years further.

All these parameters, if properly addressed, will result in a reliable and accurate diagnosis. However in physical therapy and rehabilitation fields, errors may occur since that diagnosis is closely related to the therapist experience and knowledge on the field task. For some social backgrounds, could also represent an economic impact as a diagnostic tool.

Technological growth within health fields has demonstrated that Computer-Aided Diagnosis (CAD) has become a new alternative diagnostic tool assuring more accuracy and reliability for the therapist, resulting in higher quality assistance for the patient.

ETMASD is a multipurpose platform for a subject analysis and monitoring in three-dimensional space. It focuses on non-intrusive measurement using the Kinect sensor.

## METHOD

ETMASD is a multi-purpose platform for the subject analysis and monitoring in three-dimensional space. Its main focus is to be a non-intrusive measurement tool that uses the Kinect sensor. Due to the program nature, and MATLAB granted facilities as a development platform, several disciplines might have interest to study and implement it; this can range from a development of interactive educational applications to the physical assessment full realization, which has been actually the focus on this research.

ETMASD uses the Kinect as an input device due the low cost and easy access to these sensors, without compromising its functionality. Its reduced margin of error and the regulated environment where the evaluations are conducted enables it to be used as a more accurate alternative (Khoshelham and Elberink, 2012).

Three main tasks are performing by Kinect to operate ETMASD: mapping the environment where the evaluation is carried, the environment subject position, and the subject joints mapping for the skeleton assembly; this accomplished by an infrared emission and a sensor to determine each ray distance and location. When an object is within the Kinect range of vision, the rays' bounces to it and allows knowing their exact position. Once the necessary data is obtained, is left to implement the relevant algorithms to the necessary measurement to accomplish the physical

evaluation. These measurements will be added to the system as appropriate for the presentation of a complete platform for diagnosis and monitoring on the physical therapy field as ultimate goal.

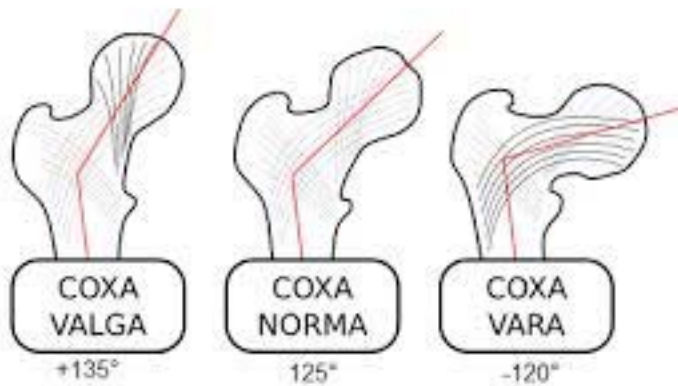
To make it clearer needs to be said that ETMASD is still tool in development, so from this point on we will refer to the implemented features in the latest software version (0.6.0). The measurements implemented in the system are: neck shaft angle measuring (NSA), offset frontal stance, and posture lateral deviation.

Kinect structure used to develop ETMASD, on Xbox 360 version is presented in Figure 1. This release was chosen because it is easy to obtain, and it is also Windows compatible.



**Figure 1.** Kinect Sensor

ETMASD provides the capability to estimate the NSA by using analytic geometry, from key angle mapping all over the skeleton. Depending on the acquired angle, it categorizes patients according to their corresponding conditions as shown in Figure 2.



**Figure 2.** Pathologies of the NSA

Another relevant method to diagnose physical pathologies is the postural control analysis. Which has different analytical methods depending on visual examinations that relies on many factors, even though it enables the clinician searching whether there is a problem or not, it is not

sufficient to determine the problem intensity, neither to indicate the most affected area (Clark et.al., 2012).

Kinect presents the possibility to accomplish longer and more accurate patient movement analysis. Even though its few limitations, the results are comparable to similar systems with three-dimensional motion analysis (Clark et.al., 2012).

ETMASD tests frontal postural deviation by comparing the height of the major joints, showing the deviation magnitude and their direction.

Postural lateral deviation testing is similar achieved. In this case, a vertical reference line is drawn and the position is determined with respect to it. Just as in the previous case the magnitude and direction of each deviation are shown.

### CONCLUDING REMARKS

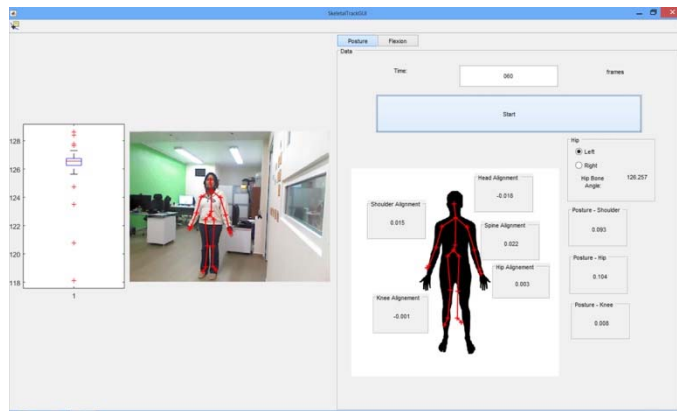
MATLAB and Kinect enable ETMASD to be a very flexible tool, having achieved very good results in an acceptable time period. This makes ETMASD an easily upgradeable tool, which is extremely useful even after completion of their development. In addition to the necessary methodologies or the evaluation it is important to simplify the understanding of this program; therefore, interface design must demonstrate to the user everything that can be done, and its capacity to correctly interpret information. These have been the principles taken into account that now can be seen in the current ETMASD interface chart, as shown in Figure 3.



**Figure 3.** Interface ETMASD (before using).

When using this software, the video captured by the Kinect and subject skeletal mapping is shown in real time to ensure that the assessment is correctly carried out. After the data collection, all relevant information obtained is presented in an organized manner next to the latest video

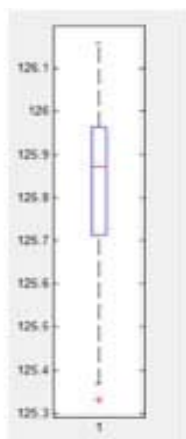
capture image for further analysis. This information corresponds to the physical evaluation presented in Figure 4.



**Figure 4.** ETMASD interface after captured

The NSA measurement result incorporates a graphic box as shown in Figure 5, which allows knowing the variation of the result and whether was properly obtained.

All these elements are part of the final result on each measurement. From its correct interpretation and information analysis displayed, further needed diagnostics can be performed. In addition, this information may be stored on the required media, in order to monitor the patients and determine the influence of their therapeutic intervention.



**Figure 5.** Graphic box

## CONCLUSIONS

This project accomplishment demonstrates the viability of three-dimensional positioning based systems development improving posture analysis to simplify diagnosis process on physical therapy

field. It is remarkable that this development promises less invasive procedures to perform this task that might replace the usual diagnostic procedure made through x-ray.

It is feasible the possibility of adding a greater amount of measurable parameters to have more diagnostic tools.

#### RECOMMENDATIONS

The presented results represent significant advances in this diagnostic tool development based on three-dimensional positioning, since the results are consistent with the ones found in the literature about anatomy of the femoral neck and posture analysis.

However it is necessary to generate and implement a protocol that enables a more specific validation of this algorithm and to confirm possible applications in the physical therapy and rehabilitation fields.

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# **Análisis de proyectos desarrollados mediante programación por pares y programación individual**

JESÚS CÁRDENAS DOMÍNGUEZ  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

RAMÓN VENTURA ROQUE HERNÁNDEZ<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

ADÁN LÓPEZ MENDOZA  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

CARLOS MANUEL JUÁREZ IBARRA  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*Este artículo presenta los resultados obtenidos en una investigación que se realizó en el ámbito universitario, en la que se pidió a varios estudiantes que siguieran dos distintos enfoques metodológicos de desarrollo de software con el objetivo de comparar las métricas de los programas que elaboraron. Los participantes, que fueron divididos en dos grupos, realizaron un mismo programa bajo las mismas condiciones. Uno de los grupos utilizó la programación por pares y el otro, la programación individual. Las métricas estudiadas fueron: Número de Sentencias, Porcentaje de comentarios, Profundidad máxima, Profundidad promedio, Complejidad máxima. De acuerdo a la prueba de Mann-Whitney que se realizó, se observó que los programadores por pares tienden a escribir código en mayor cantidad en comparación con los programadores individuales. En el resto de las métricas no se detectaron diferencias estadísticas significativas.*

**PALABRAS CLAVE** *Programación por pares, Programación Individual, Desarrollo de Software, Universidad*

*This paper presents the results of a research carried out in a university setting, where several students followed two different software development methodological approaches. The objective of comparing the metrics in the programs were created by them. The participants, who were divided in two groups, developed the same program under the same conditions. One group used the programming in pairs and the other as solo programmers. The metrics that were analyzed*

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<sup>1</sup> Address correspondence to Ramón Ventura Roque Hernández, Facultad de Comercio, Administración y Ciencias Sociales, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México.  
E-mail: [rvhernandez@uat.edu.mx](mailto:rvhernandez@uat.edu.mx); [ramonroque@yahoo.com](mailto:ramonroque@yahoo.com)



were: *Number of sentences, Percentage of comments, Maximum depth, Average depth, and Maximum complexity. According to the Mann-Whitney test that was performed, it was observed that paired programmers tend to write more code than the solo programmers. No significant statistical differences were detected in the rest of the metrics.*

**KEYWORDS** *Paired Programming, Solo Programming, Software development, University.*

## INTRODUCCIÓN

El desarrollo de software no es una tarea fácil; prueba de esto es que existen numerosas propuestas metodológicas que abordan de manera diferente el proceso de creación de software buscando obtener mayor calidad en menor tiempo. Sin embargo, de nada sirven buenas notaciones y herramientas si no se poseen directivas para su aplicación efectiva y práctica en los equipos de trabajo. Por esto el creciente interés de organizaciones y entidades educativas en el proceso de desarrollo de software y su enseñanza contextualizada.

Hasta hace algunos años el proceso de desarrollo llevaba asociado un marcado énfasis en el control del proceso mediante una rigurosa definición de roles, actividades y artefactos, incluyendo modelado y documentación detallada. Este esquema “tradicional” para abordar el desarrollo de software ha demostrado ser efectivo y necesario en proyectos de gran tamaño (en cuanto a tiempo y recursos). Sin embargo, este enfoque no resulta ser el más adecuado para muchos de los proyectos actuales donde el entorno del sistema es muy cambiante y en donde se exige reducir drásticamente los tiempos de desarrollo pero manteniendo una alta calidad en los mismos. Ante las dificultades para utilizar metodologías tradicionales con estas restricciones de tiempo y flexibilidad, muchos equipos de desarrollo se arriesgan a prescindir de “buenas practicas” de la ingeniería del software, asumiendo el riesgo que ello conlleva. En este ambiente tan cambiante es donde las metodologías ágiles surgen con gran fuerza como una posible respuesta para llenar ese vacío metodológico. Por estar enfocadas especialmente mas no obligatoriamente a proyectos pequeños, las metodologías ágiles constituyen una solución a medida para este entorno, aportando una elevada simplificación que a pesar de ello no renuncia a las prácticas esenciales para asegurar la calidad del producto final.

Las metodologías ágiles son sin duda uno de los temas más debatidos en la actualidad dentro de la ingeniería de software por partidarios de las metodologías “tradicionales” y aquellos que apoyan las ideas emanadas de las metodologías ágiles. Para muchos equipos de desarrollo, el uso de metodologías tradicionales resulta muy lejano a su forma de trabajo considerando las dificultades de su introducción e inversión asociada en formación y herramientas. Adicionalmente, las características de los proyectos para los cuales las metodologías ágiles han sido especialmente pensadas, se ajustan a un amplio rango de proyectos industriales de desarrollo de software: equipos de desarrollo pequeños, con plazos reducidos, requisitos volátiles, y/o basados en nuevas tecnologías.

En este artículo se abordan los principios de la programación por pares, y se presentan los resultados de una investigación cuyo objetivo fue comparar los proyectos realizados en el entorno universitario por los estudiantes que programan en parejas y quienes lo hacen de manera

individual, utilizando para esta finalidad una perspectiva de métricas de software. La estructura del trabajo es la siguiente: primero se presentan los antecedentes teóricos, posteriormente se aborda la metodología que se siguió en el desarrollo del estudio, después se presentan los resultados obtenidos y finalmente se exponen las conclusiones y el trabajo futuro.

## ANTECEDENTES

Como comenta Brooks, “la complejidad del software es una propiedad esencial, no accidental” (Brooks, 1987, p2). Por tanto entendemos que el desarrollo de software por sí mismo tiende a ser complejo, lo que conlleva a la búsqueda de soluciones que permitan la adaptabilidad, mejora y mantenimiento del software. Una de las propuestas para enfrentar esta complejidad es la Programación Extrema (eXtreme Programming, XP por sus siglas en inglés), ideada por Kent Beck, Ward Cunningham y Ron Jeffries. Esta propuesta se dio a conocer cuándo, gracias a su aplicación, la compañía Chrysler pudo lanzar el sistema Chrysler Comprehensive Compensation en Mayo de 1997 a pesar de los problemas iniciales que estaba teniendo su desarrollo siguiendo una metodología tradicional (Herranz Serrano, 2012).

La Programación Extrema es una metodología ágil para desarrollar software (Fowler, 2005). En contraste con las metodologías tradicionales, burocráticas y poco ágiles, la XP tiene las siguientes características: 1. Está orientada a quien produce y usa el software. 2. Reduce el costo del cambio en todas las etapas del ciclo de vida del sistema. 3. Combina las que han demostrado ser las mejores prácticas para desarrollar software y las lleva al extremo (Beck, 2000; Fowler, 2005).

## PROGRAMACIÓN POR PARES

Entre la variedad de prácticas de la XP destaca la programación por pares por su dinamismo y enfoque colaborativo que consiste en una pareja de programadores, donde a uno se le denomina “conductor”, quien se encarga del proceso de codificación y está frente al teclado y al otro “navegador”, quien se encarga de revisar oportunamente y ver más allá de la escritura de código en cuanto al desarrollo de software se refiere (Beck, 2000). En este enfoque metodológico, los dos programadores producen conjuntamente un software, abarcando actividades de análisis, diseño, codificación y prueba. Además como menciona Cunningham (Cunningham, 2000) ambos actúan como un organismo unificado, inteligente, que trabaja conjuntamente, y es responsable de todos los aspectos del software desarrollado. Uno de los integrantes, el conductor, controla el lápiz, ratón o teclado y escribe el código. El otro observa, continúa y gestiona el control de trabajo, para buscar defectos, analizar alternativas, aplicar recursos, siempre teniendo en cuenta las implicaciones estratégicas de sus acciones. Estos roles suelen cambiarse cada determinado tiempo dependiendo de los programadores.

En el mundo universitario, se ha encontrado que las asignaciones de programación en parejas contribuyen a mejorar la retención de ambos estudiantes. En 2000, Linda Werner (Werner, 2000) y sus colegas llevaron a cabo una investigación para entender el efecto del aprendizaje colaborativo en la tasa de retención de alumnas en Ciencias de la Computación, donde demostró que los

enfoques colaborativos ayudan a la creación de código más robusto y a su agilidad. Motivados por la gran mayoría de las evidencias positivas en el aprendizaje colaborativo para estudiantes, existen trabajos que han realizado la comparación de la programación en pares respecto a la programación en solitario (Barker and Cohoon, 2000).

En 1998 el profesor de universidad Jon Nosek reportó un estudio que realizó a 20 estudiantes de programación donde se formó un equipo de parejas y otro de programadores individuales y se les asignó el reto de realizar una solución a un problema planteado mediante software en el que cada grupo con sus recursos y medios equivalentes tenía que desarrollar el proyecto. Los grupos en parejas usaron el 60% del tiempo en relacionarse y adaptarse entre sí y aun así terminaron 40% más rápido que los grupos individuales y con menos errores, dando como resultado un producto de mejor calidad (Nosek, 1998).

Por otra parte, Chong y Hurlbutt (Chong, 2007) llevaron a cabo una observación etnográfica de dos equipos de programadores profesionales en pares durante un período de cuatro meses. Encontraron que los programadores profesionales juegan diferentes roles que se dedican de forma conjunta a las actividades en comparación con el programador tradicional (Beck, 2000). Hulkko y Abrahamsson (Hulkko, 2005) observaron resultados mixtos respecto a los beneficios percibidos de la programación en parejas. Utilizando los datos empíricos de cuatro proyectos en C++ y Java que van de 3,7 KLOC (miles de líneas de código) a 7,7 KLOC, observaron una densidad de defectos comparables entre la programación individual y en parejas en uno de sus proyectos, y en otro, una significativa baja densidad de defectos a favor de los programadores por pares.

## MÉTRICAS DE SOFTWARE

Como comenta Roger S. Pressman (Pressman 2005), las métricas pueden proporcionar una forma de valorar la calidad del software con base en un conjunto de reglas claramente definidas. También proporcionan comprensión inmediata, en lugar de hacerlo después de los hechos. Esto permite descubrir y corregir potenciales problemas antes de que se conviertan en problemas mayores. Las mediciones que pueden usarse para valorar la calidad del producto así como sus atributos internos, ofrecen una indicación en tiempo real de la eficacia de los modelos de requerimientos, diseño y código, así como de la efectividad de los casos de prueba y de la calidad global del software.

Los proyectos se analizaron con el programa SourceMonitor (Campwood, 2016). Las métricas que se incluyeron en este estudio son definidas de la siguiente manera (Roque, Salinas, Lopez, Mota & Flores, 2014):

Número de sentencias. Esta métrica define las ramificaciones tales como if, for y while, los métodos y los atributos, las sentencias de control de excepción tales como try, catch y finally.

Porcentaje de líneas comentadas. Es el número de líneas en porcentaje que están marcadas como comentarios según las especificaciones del lenguaje de programación utilizado. Para este estudio se tomó en cuenta el porcentaje de líneas comentadas ignorando los comentarios de los encabezados y pies de página.

Profundidad. Se refiere a la colocación de bloques de código dentro de otros, lo que da lugar a bloques anidados; éstos se introducen principalmente con las sentencias de control como “if” y “while”. Conforme se aumenta la profundidad, el código resulta más difícil de leer porque con cada nuevo nivel de anidamiento se deben evaluar más condiciones para saber el momento en el que el código será ejecutado.

Profundidad máxima. Se refiere al nivel mayor de anidamiento registrado en el proyecto.

Profundidad promedio. Es el promedio ponderado de la profundidad de bloques de código anidados en un proyecto.

Complejidad. Ésta métrica registra el número de rutas de ejecución en un método o función. Cada método o función tiene una complejidad de 1 más 1 por cada rama en las sentencias if, else, for, foreach, while.

Complejidad máxima. Es el valor de complejidad más grande que se observa en los métodos del proyecto analizado.

## METODOLOGÍA

Esta investigación se condujo con el objetivo de encontrar las diferencias entre el desarrollo de software utilizando la programación por pares y la programación en solitario. Para esto, se utilizó un enfoque basado en las métricas de software de los programas creados por ambos grupos. Para este estudio se les pidió a alumnos de la carrera Licenciatura en informática de la Facultad de Comercio, Administración y Ciencias Sociales de Nuevo Laredo de la Universidad Autónoma De Tamaulipas que resolvieran un problema mediante programación (ver Tabla 1). Los alumnos fueron asignados aleatoriamente a dos grupos: por pares y en solitario. Se obtuvieron 43 programas, de los cuales 26 se realizaron en solitario y 17 en pares. Todos los alumnos participantes cursaban en ese periodo alguna materia de programación, por lo que el lenguaje utilizado para el desarrollo del problema podía ser C# o VB.NET, lo cual dependía del lenguaje que estuvieran utilizando los alumnos en ese periodo.

La creación de las aplicaciones se realizó en el laboratorio de programación de la Facultad. Cada computadora contaba con las mismas características y posibilidades; los alumnos que trabajaron por pares tenían que utilizar una sola computadora y alternar el teclado con su compañero cada cinco minutos. Se contó con dos horas para completar todas las actividades relacionadas con este experimento. Se dejó a consideración del alumno el uso de las herramientas que considerara pertinentes, incluida la posibilidad de consultar en internet cualquier información, siempre y cuando el programa proporcionara los resultados solicitados en la Tabla 1.

**Tabla 1** Resumen de la redacción del problema.

Realizar un programa que solicite al usuario un número y realice las siguientes operaciones con él:

- 1) Sumarle el mismo número.
- 2) Multiplicarlo por el mismo número.
- 3) Dividirlo entre (el mismo número más 1).
- 4) Restarle (el mismo número menos 1).

El programa debe proporcionar también la suma de todos los resultados más el número que introdujo el usuario. Si esta suma total resulta menor a 30, se debe imprimir el mensaje “el número es muy pequeño”. Si la suma total es mayor a 50, se debe imprimir el mensaje “el número es muy grande”.

Finalmente, se debe almacenar la suma total para almacenarla y listarla en una bitácora que contenga todas las operaciones realizadas incluyendo la fecha y hora en la que se ejecutaron.

Después de mostrarles la redacción, se les presentó de manera visual un ejemplo del problema con la finalidad de dejar aún más clara la idea. Al terminar su trabajo los alumnos enviaron sus archivos de proyecto al Sistema de Gestión de aprendizaje (Learning Management System) Blackboard (UAT, 2016) de la universidad, con su respectivo identificador que pudiera determinar la manera en la que trabajaron los participantes: solos o en pares. Al término del ejercicio con cada grupo se procedió a descargar los archivos de cada alumno para analizarlos con el software Source Monitor (Campwood, 2016), de donde posteriormente se enviaron los resultados a una hoja de cálculo de Microsoft Excel (Microsoft, 2016), para finalmente exportarlos al Software SPSS (IBM, 2016) en donde se realizó un análisis preliminar de los descriptivos de los datos, así como también se condujeron pruebas de Mann Whitney para buscar si las diferencias aritméticas observadas entre las métricas de los grupos eran estadísticamente significativas con una referencia del 95% de confianza. Para la comparación de cada métrica  $p$  entre ambos grupos se plantearon las siguientes hipótesis:

- $H_0$ : No existen diferencias estadísticas significativas en la métrica “ $p$ ” de los programas desarrollados con programación por pares y con programación individual.
- $H_a$ : Existen diferencias estadísticas significativas en la métrica “ $p$ ” de los programas desarrollados con programación por pares y con programación individual.

## RESULTADOS

Como producto del análisis realizado, primero se obtuvo la estadística descriptiva mostrada en la Tabla 2, en donde se observa cada métrica y los datos de cada grupo: la media aritmética de esa métrica, la desviación estándar y la mediana.

**Tabla 2.** Datos estadísticos descriptivos de los datos analizados.

Métrica	Programación individual			Programación por pares		
	Media	Desviación estándar	Mediana	Media	Desviación estándar	Mediana
Número de Sentencias	22.92	9.419	23.50	29.94	7.224	29
Porcentaje de comentarios	2.988	4.8499	0	2.665	4.2395	0
Profundidad máxima	2.88	1.107	3	3.35	.606	3
Profundidad promedio	1.8012	.49045	1.93	1.7188	.63308	1.91
Complejidad máxima	2.54	1.860	2.50	3.12	1.409	3

**Tabla 3.** Resultados de la prueba Mann-Whitney.

Métrica	PValor	U de Mann-Whitney
Número de Sentencias	.012	120.00
Porcentaje de comentarios	.768	210.50
Profundidad máxima	.101	158.00
Profundidad promedio	.980	220.00
Complejidad máxima	.247	175.50

**Tabla 4.** Rangos promedio obtenidos en la prueba Mann-Whitney para los resultados estadísticamente significativos.

Métrica	Programación individual	Programación por pares	Conclusión
Número de sentencias	18.12	27.94	Los participantes que programaron por pares escribieron significativamente más sentencias que quienes programaron en solitario.

Como se puede observar en la Tabla 2, existen algunas diferencias aritméticas en las métricas de ambos grupos. Sin embargo, los resultados de la prueba de Mann Whitney (Tabla 3) revelaron que únicamente el número de sentencias puede considerarse significativo (PValor = 0.012, U=120). De esta manera, al observar los rangos promedio de la tabla 4, puede concluirse que los participantes que trabajaron en parejas escribieron mayor número de sentencias.

Basados en los resultados de esta prueba y en la inspección visual realizada a los proyectos desarrollados por pares, los autores de este trabajo encontraron que los programadores por pares

tienden a escribir código en mayor cantidad y con una mayor riqueza de construcción en comparación con los programadores individuales, confirmando en el contexto estudiado, lo encontrado por Werner (Werner, 2000).

## CONCLUSIONES Y TRABAJOS FUTUROS

En este trabajo se presentó un estudio basado en el análisis de métricas de software para comparar el desarrollo de software individual y la programación por pares. Se les asignó a varios estudiantes universitarios un problema que requería ser resuelto mediante software y se les separó aleatoriamente en dos grupos: programadores por pares y programadores individuales. Las soluciones propuestas por los alumnos se procesaron mediante el software analizador de métricas Source Monitor y fueron analizadas en el paquete estadístico SPSS. Se encontró que existe diferencia estadística significativa entre ambos grupos únicamente en referencia al número de sentencias escritas de código fuente.

Se deben destacar los hechos de que los participantes fueron alumnos universitarios y que tuvieron su primer encuentro con el enfoque colaborativo de la programación por pares durante el desarrollo de esta investigación, es decir, no habían trabajado anteriormente con este enfoque metodológico. Por esta razón, los resultados no podrían generalizarse hacia participantes profesionales o que ya conozcan el modelo de trabajo de esta metodología. Además, también se debe tomar en cuenta que los alumnos fueron distribuidos de manera aleatoria y obligatoria a su pareja de trabajo, y pudieron ser asignados con una persona con la que no les resultaba tan cómodo programar por pares, como si hubieran tenido la posibilidad de elegirla ellos mismos.

Los hallazgos permiten vislumbrar que la implementación de la programación por pares en los cursos universitarios podría ser adecuada bajo ciertas condiciones. Como trabajo futuro queda ampliar el ámbito del estudio a más universidades y niveles escolares; así mismo, se sugiere incrementar el número de métricas estudiadas en los proyectos desarrollados por los participantes.

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# Aplicación de la programación en pares al desarrollo de software en los cursos universitarios

DIEGO BRAVO HERRERA  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

RAMÓN VENTURA ROQUE HERNÁNDEZ<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

JUAN ANTONIO HERRERA IZAGUIRRE  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

ADÁN LÓPEZ MENDOZA  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*Este artículo muestra los resultados de un estudio que comparó la percepción de un grupo seleccionado de estudiantes universitarios acerca del enfoque metodológico conocido como “programación por pares”. El estudio se centró en 47 estudiantes de la carrera profesional de Licenciatura en Informática de la Facultad de Comercio, Administración y Ciencias Sociales de Nuevo Laredo en la Universidad Autónoma de Tamaulipas, México. Todos desarrollaron un mismo programa siguiendo los principios de la “programación por pares” bajo las mismas condiciones y al finalizar contestaron un cuestionario. Para el análisis de los datos, se dividió a los participantes en dos grupos, uno de 30 alumnos cursando primer y tercer semestre de la carrera y otro de 17 cursando quinto y séptimo semestre de la carrera. Se utilizó la prueba estadística de Mann Whitney para buscar diferencias entre las percepciones recabadas por estos dos grupos. Comparado con el grupo de primeros semestres de la carrera, el grupo de los últimos semestres de la carrera sintieron que detectaron errores más rápidamente siguiendo el enfoque metodológico por parejas. No se encontraron diferencias significativas en la percepción acerca del tiempo de desarrollo ni de la calidad del software obtenido.*

**PALABRAS CLAVE**      *Programación en pares, Educación, Universidad, Alumnos*

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<sup>1</sup> Address correspondence to Ramón Ventura Roque Hernández, Facultad de Comercio, Administración y Ciencias Sociales, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México.  
E-mail: [rvhernandez@uat.edu.mx](mailto:rvhernandez@uat.edu.mx); [ramonroque@yahoo.com](mailto:ramonroque@yahoo.com)

*This paper presents the results of a study that compared the perception of a group of selected university students about the methodological approach known as “Pair Programming.” The study focused on 47 students from the Computer Science undergraduate program at Department of Information Systems of the School of Business, Administration and Social Sciences, Universidad Autónoma de Tamaulipas, México. All of them developed the same program, following the principles of Pair Programming under the same conditions. At the end, they answered a questionnaire. For data analysis, we divided the participants in two groups: one containing 30 students enrolled in first and third semester and another one with 17 enrolled in fifth and seventh semester. Mann Whitney tests were used to determine the statistically significant differences between the perceptions of these two groups. Compared to the students in their first semesters, the advanced students felt that they detected the errors faster using the Pair Programming methodology. No significant differences were found in the perception of development time or in the achieved quality of the final version of the software.*

**KEYWORDS** *Pair Programming, Education, University, Students.*

## INTRODUCCIÓN

La necesidad de contar con programas eficientes, de alta calidad, y que ayuden a optimizar las tareas repetitivas ha dado paso a la aparición y uso de distintos enfoques metodológicos para el desarrollo de software, los cuales se utilizan para estructurar y planear los procesos involucrados en la creación de programas de computadora. A lo largo del tiempo se han ido utilizando distintas metodologías como por ejemplo: el modelo en cascada, en espiral, y recientemente, los enfoques ágiles entre los cuales destacan SCRUM y Programación Extrema (eXtreme Programming o XP por sus siglas en inglés).

En esta investigación la atención se centró en la Programación en Pares, la cual es parte de la Programación Extrema y consiste en crear aplicaciones en equipos de dos programadores. Los creadores de este enfoque indican que al programar con otra persona, la calidad del software aumenta, la detección de errores es más eficaz y el tiempo de trabajo se reduce.

El presente estudio se realizó con el propósito de conocer si existe diferencia en la percepción que tienen los alumnos de distintos semestres en relación a la programación en pares en los tres aspectos mencionados anteriormente: calidad del software, detección de errores y tiempo de desarrollo. La estructura de este artículo es la siguiente: Los antecedentes de la programación en pares y de investigaciones previas se resumen en el primer apartado. Después, se explica la metodología del estudio. Posteriormente se presentan los resultados y finalmente se exponen las conclusiones y el trabajo futuro.

## ANTECEDENTES

El desarrollo de software es el proceso de analizar, diseñar, codificar, depurar y mantener el código fuente con el propósito de realizar tareas específicas automáticamente. Para desarrollar software se requieren conocimientos y habilidades diversas, como por ejemplo, entender las operaciones de

las diferentes áreas en las que el programa se implantará, además de dominar el razonamiento lógico y el manejo de las herramientas como entornos y lenguajes.

La Programación Extrema es una disciplina de desarrollo de software en la familia de las metodologías ágiles que contribuye a la mejora de calidad a través del uso de una docena de prácticas (Beck & Andres, 2004). La XP está orientada a trabajos pequeños y medianos, en los que los requerimientos cambian constantemente en su etapa de desarrollo (González & Fernández, 2006). En este tipo de metodologías se busca mejorar la comunicación con el cliente, reducir la documentación, y ponderar mayormente a las personas del equipo siempre con el objetivo de lograr un software de buena calidad al final del proceso de desarrollo.

La Programación en Pares es una de las 12 prácticas definidas en la Programación Extrema. Es una práctica en la cual dos programadores trabajan juntos en una computadora colaborando en el mismo diseño, algoritmo, código y prueba. (Mohd, Idris, & Nantha, 2006). Los pares cambian los roles regularmente, pero sin ninguna formalidad. Una buena colaboración y una buena comunicación son requerimientos para una buena ejecución de la programación en pares (Estácio & Prikladnicki, 2015).

Algunos autores afirman que una efectiva herramienta de distribución permite cambiar los roles fácilmente, hablar con el otro y apuntar objetos en la pantalla (Hanks, 2005). Según (Aubin, Blautzik, & Dejean, 2014), a pesar de lo que se podría pensar, dos programadores son más eficientes que uno solo para concluir una tarea determinada. La teoría confirma que la satisfacción y confianza con el rendimiento son mayores en los equipos que realizan Programación en Pares que en los que programan en solitario. Los pares pueden emitir evaluaciones y opiniones acerca del trabajo y el rendimiento logrados; de esta manera, el equipo puede responder a los requerimientos cambiantes ajustando parámetros en la manera de realizar sus tareas (Balijepally, Mahapatra, Nerur, & Price, 2009).

Así como la programación por pares gana popularidad en las industrias, los profesores en las aulas se han comenzado a interesar en sus beneficios (Rimington, 2010). Estos estudios revelan que la Programación en Pares es efectiva, motivacional y disfrutable e indican que los alumnos tienen más confianza mientras programan en parejas (Balijepally, Mahapatra, Nerur, & Price, 2009).

## METODOLOGÍA

Para esta investigación, se realizó el desarrollo experimental de un proyecto de software siguiendo los principios de la Programación por Pares y se recolectaron datos con un cuestionario que los participantes contestaron al finalizar su trabajo. Se contó con la participación de 47 alumnos que cursaban primero, tercero, quinto y séptimo semestre de la carrera profesional de Licenciatura en informática, de la Facultad de Comercio, Administración y Ciencias Sociales de Nuevo Laredo de la Universidad Autónoma de Tamaulipas, México. Todos ellos desarrollaron el mismo programa bajo las mismas condiciones y contestaron las mismas preguntas. Las principales características que describen esta muestra se encuentran en la Tabla 1.

Este experimento se llevó a cabo durante una sesión regular de clase. Se pidió permiso al maestro titular de las materias de programación, el cual fue el mismo para los cuatro grupos y no interactuó con los participantes durante ese tiempo. Los alumnos no conocían detalle alguno del experimento y no se les ofreció ningún tipo de estímulo económico o académico.

**Tabla 1.** Características de los participantes y de los tipos de proyectos tomados en cuenta para esta investigación.

Categoría	Semestre	Alumnos que programaron por pares	Materia que cursaban	Lenguaje utilizado	Tipo de proyecto realizado
Primeros semestres de la Carrera	1	14	Fundamentos de la informática y metodología de la programación	Visual Basic .Net	Consola
	3	16	Programación básica	Visual Basic. Net	Formas de Windows
Últimos semestres de la carrera	5	7	Programación avanzada	C#	Formas de Windows
	7	10	Diseño y desarrollo de aplicaciones	C#	Formas de Windows

Para este estudio, se categorizaron los alumnos de primer y tercer semestre en un solo grupo identificado como “Primeros semestres de la carrera” (n=30) y los alumnos de quinto y séptimo semestre en otro grupo denominado “Últimos semestres de la carrera” (n=17). Esto se hizo debido a que a los alumnos que cursan el primer y tercer semestre se les imparten materias básicas de desarrollo de software, mientras que a los de quinto y séptimo semestre se les imparten materias avanzadas (ver Tabla 1).

El desarrollo de esta investigación se llevó a cabo en el laboratorio de programación que se encuentra ubicado dentro de las instalaciones de la facultad. Ahí se contó con 30 equipos de cómputo idénticos con las siguientes características: Procesador Intel Core i5, 8 Gigabytes de memoria RAM, 1 Terabyte de disco duro. En todos se tenía la misma versión de Visual Studio 2013 en español con los lenguajes Visual Basic .Net y C#.

El tiempo de desarrollo se aplicó de la siguiente manera: durante los primeros veinte minutos se esperó a que todos los alumnos llegaran al laboratorio. Se permitió el ingreso únicamente a los alumnos que llegaron antes de este límite de tiempo. Durante los siguientes veinte minutos se dio una explicación concisa de la programación en pares, en la cual se tuvo el debido cuidado de no predisponer a los participantes hacia algún enfoque metodológico, y se dio la explicación del software que se tenía que desarrollar. Posteriormente, los alumnos tuvieron 70 minutos para concluir el programa solicitado y diez minutos más para completar un cuestionario que contestaron de manera individual.

#### Descripción del programa solicitado

En la tabla 2 se muestra la descripción del programa que se les pidió realizar a los alumnos. También se proporcionó un ejemplo demostrativo del resultado deseado. Todo esto fue expuesto

por uno de los investigadores con el uso de diapositivas y un proyector. Se aclaró que estaba permitido el uso de herramientas externas al entorno de desarrollo (consultas en internet, guías, apuntes, etc.). Sin embargo, nadie adicional a su pareja de trabajo podía interactuar con ellos por ningún medio mientras desarrollaban su programa. También se precisó que la interfaz de usuario se podía diseñar de cualquier manera que ellos consideraran conveniente mientras se mostraran los resultados solicitados.

**Tabla 2.** Descripción del programa que se solicitó a los alumnos.

<p>Realizar un programa que solicite al usuario un número y realice las siguientes operaciones con él:</p> <ol style="list-style-type: none"> <li>1) Sumarle el mismo número.</li> <li>2) Multiplicarlo por el mismo número.</li> <li>3) Dividirlo entre (el mismo número más 1).</li> <li>4) Restarle (el mismo número menos 1).</li> </ol> <p>Mostrar los resultados de cada operación, además de la suma de todos los resultados anteriores (incluyendo el número capturado).</p> <p>Si la suma de todo es menor a 30, mostrar un mensaje indicando que el número es muy pequeño. Si la suma es mayor a 50, mostrar un mensaje de que el número es muy grande. Por último almacenar de algún modo la suma de todas las cantidades para posteriormente listar la bitácora de las operaciones realizadas con la fecha y hora en que se realizaron.</p>
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### Cuestionario

Cuando los participantes terminaban la etapa de desarrollo o se terminaba el tiempo indicado, se les proporciono el cuestionado que contiene la Tabla 3. En los planteamientos se utilizó la escala de Likert y las posibles respuestas se codificaron de la siguiente manera: 1. Completamente en desacuerdo, 2. En desacuerdo, 3. Neutral, 4. De acuerdo, 5. Completamente de acuerdo.

**Tabla 3.** Cuestionario aplicado a los participantes.

Identificador	Planteamiento
P1	Trabajar con esta metodología reduce el tiempo de desarrollo.
P2	Con esta metodología se detectaron errores rápidamente.
P3	La calidad del software final resulta mejor utilizando esta metodología.

### Metodología para el análisis de los datos

Se utilizó el paquete estadístico SPSS (IBM Corp., 2012) para la captura y análisis de los datos. En este software se aplicó la prueba no paramétrica de Mann Whitney (Kuanli, Pavur, & Keeling, 2006) para llevar a cabo la comparación de las respuestas de ambos grupos a las 3 preguntas que se les presentaron. Las hipótesis planteadas para el estudio de cada pregunta incluida en la Tabla 3 fueron las siguientes:

H<sub>0</sub>: No existen diferencias estadísticamente significativas entre las respuestas proporcionadas por los estudiantes de los primeros y los últimos semestres.

H<sub>a</sub>: Existen diferencias estadísticamente significativas entre las respuestas proporcionadas por los estudiantes de los primeros y los últimos semestres.

El nivel de confianza de referencia que se utilizó fue el 95%. De esta manera, los PValores menores a .05 fueron indicadores del rechazo de  $H_0$  y de la consecuente conclusión de la existencia de diferencias estadísticas significativas entre las respuestas de los grupos para cada pregunta que estaba siendo analizada.

## RESULTADOS

Los resultados obtenidos de la prueba de Mann Whitney se muestran en la Tabla 4. Puede observarse que el único planteamiento en el que existieron diferencias estadísticas significativas es P2 – “Con esta metodología se detectaron errores rápidamente” (PValor=.009, U=148.00). La tabla 5 muestra los rangos promedio para cada uno de los grupos estudiados, donde se puede observar que los estudiantes de los últimos semestres percibieron que pudieron detectar errores más rápidamente que el grupo de los primeros semestres.

**Tabla 4.** Resultados de la prueba Mann-Whitney.

Planteamiento	U de Mann-Whitney	PValor
P1- Trabajar con la metodología utilizada reduce el tiempo de desarrollo	201.000	.167
P2-Con la metodología utilizada, se detectaron errores rápidamente	148.000	.009
P3-La calidad del software final resulta mejor utilizando esta metodología	192.500	.134

**Tabla 5.** Rangos promedio del planteamiento 2 para ambos grupos.

Planteamiento	Grupo	n	Rango promedio
P2-Con la metodología utilizada, se detectaron errores rápidamente	Primeros semestres (1,3)	30	20.43
	Últimos semestres (5,7)	17	30.29

## CONCLUSIONES Y TRABAJO FUTURO

En este artículo se mostraron los resultados de un estudio en el que se comparó la percepción de dos segmentos de estudiantes universitarios (de los primeros y de los últimos semestres) acerca del desarrollo de software siguiendo los principios de la programación por pares. La prueba estadística de Mann Whitney realizada con los datos recabados del cuestionario mostró que los alumnos que cursan los últimos semestres de la carrera percibieron que pudieron detectar errores más rápidamente programando en pares. Por otra parte, no se encontró diferencia estadística significativa en la percepción acerca del tiempo de desarrollo y de la calidad de software elaborado.

Los resultados aquí mostrados, aunados a las experiencias previas de los autores, parecen favorecer a la Programación por Pares, al menos en algunos aspectos y bajo algunas condiciones. Estas conclusiones concuerdan con los resultados de la investigación de (Aubin, Et Al, 2014) acerca de la programación en pares en la educación universitaria.

Estos hallazgos son importantes porque ayudarán en la selección fundamentada de metodologías y estrategias para la enseñanza de la programación en los distintos segmentos de alumnos de la carrera de Licenciatura en informática.

Como trabajo futuro, se plantea aumentar el tamaño de la muestra y realizar el estudio en otros contextos universitarios.



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## **Satisfacción de utilizar MOB programing por alumnos desarrolladores en un ambiente universitario**

ÁTALA DULCE GÓMEZ ARELLANO  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

CPA JUAN MANUEL SALINAS ESCANDON, MTI, CD<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

LIC. LUIS HERNÁN LOPE DÍAZ, MAEE  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

LIC. SALVADOR MOTA MARTÍNEZ, MTI  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*El objetivo de esta investigación introductoria a nivel descriptivo pretende descubrir si existe algún grado de satisfacción en utilizar la metodología de programación MOB entre los alumnos universitarios del área de Informática de la Facultad de Comercio, Administración y Ciencias Sociales al momento de desarrollar software utilizando esta metodología y cuál es la satisfacción con respecto al código generado durante el desarrollo de software. La satisfacción del estudiante es representada como un indicador importante para medir la calidad del desarrollo de software en el entorno universitario y servirá como un argumento para implementar cambios en los programas académicos del área.*

*PALABRAS CLAVE Desarrollo de software, Programación MOB, Satisfacción del programador, Calidad de software.*

*The objective of this descriptive introductory research tries to discover whether there is any degree of satisfaction using the MOB programming methodology among university students from the Department of Information Systems of the School of Business, Administration and Social Sciences when developing software using this methodology and what is the satisfaction with the code generated during the software development phase. Student satisfaction is represented as a key component and an important measure for the potential software development quality in the*

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<sup>1</sup> Address correspondence to CPA Juan Manuel Salinas Escandon, MTI, CD, Facultad de Comercio, Administración y Ciencias Sociales, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México.  
E-mail: [jmsalinas@uat.edu.mx](mailto:jmsalinas@uat.edu.mx)

*university environment. This will serve as a supporting argument to implement changes in the academic programs in this area.*

**KEYWORDS** *Software Development, MOB Programing, Programmer Satisfaction, Software quality.*

## INTRODUCCIÓN

En el área educativa orientada a la enseñanza del proceso y actividad de programación surge la necesidad de encontrar un enfoque que permita a los estudiantes desarrollar software con calidad así como también trabajar en equipo y establecer una buena comunicación, por este motivo es necesario retomar y revisar el enfoque de programación MOB. Debido a las características y potenciales beneficios que esta metodología aporta para utilizarlo como una herramienta con la cual el alumno del área de Informática de la Facultad de Comercio, Administración y Ciencias Sociales pueda aplicarla para obtener conocimiento, desarrollar habilidades, valores y obtener satisfacción al momento de enfrentar el desarrollo de un proyecto de programación.

## LIMITACIONES

Las limitaciones que presenta esta investigación es que el estudio práctico fue aplicado en la Facultad De Comercio, Administración y Ciencias Sociales ubicada en la ciudad de Nuevo Laredo, perteneciente a la Universidad Autónoma de Tamaulipas. Los participantes son alumnos de la carrera profesional de licenciatura en Informática que cursaron el quinto y séptimo semestre durante el año 2015, por lo que no se puede generalizar debido al contexto educativo local que es pionero en la experimentación de este tipo de metodologías ágiles de desarrollo de software. Otra limitación es que existen una cantidad muy limitada de artículos utilizando el concepto de programación MOB comparado con el enfoque de programación individual.

## METODOLOGÍA DE DESARROLLO DE SOFTWARE

En la actualidad existen muchas y diferentes metodologías de desarrollo de software, Areba (2001) expresa que las metodologías

“se fundamentan con tres pilares básicos: que hay que hacer y en qué orden, como deben realizarse las tareas y con que pueden llevarse a cabo. Esto es, que etapas, actividades y tareas se deben acometer, que técnicas deben emplearse para realizar estas actividades y cuáles son las herramientas de software a utilizar en cada caso”.

Estas tienen reglas, etapas, distintas orientaciones sobre cómo llevar a cabo el ciclo de desarrollo del software.

Dentro de la metodología se encuentran los modelos de desarrollo que, de acuerdo con Amo, et al (2005) definen al modelo como:

“una filosofía o marco de actuación para obtener un software que se ajuste a unas determinadas características, por ejemplo, que el producto final este constituido por un conjunto de procedimientos o funciones forman entidades autónomas (SIC)”, estos se implementan en las metodologías de desarrollo de software que se recomiendan en la ingeniería de software que de acuerdo con Loira (2005), “es una disciplina de la ingeniería que comprende todos los aspectos de la producción de software desde las etapas iniciales de la especificación del sistema, hasta el mantenimiento de este después de que se utiliza”, recomienda también que se indiquen las herramientas que se van a utilizar o aplicar en el desarrollo, para que así se pueda obtener el producto de software que cumpla con los requerimientos esperados.

## INGENIERÍA DEL SOFTWARE

Existen diversas definiciones del concepto ingeniería del software entre ellas podemos encontrar la definición propuesta por Fritz Bauer en una conferencia (S/F) en donde señala que la ingeniería del software es “el establecimiento y uso de principios sólidos de la ingeniería para obtener económicamente un software confiable y que funcione de modo eficiente en máquinas reales”. Otra de las definiciones más conocidas fue elaborada por el IEEE [IEE93], la cual expresa que la ingeniería del software es “la aplicación de un enfoque sistemático, disciplinado y cuantificable al desarrollo, operación y mantenimiento del software”.

La ingeniería del software abarca herramientas las cuales proporcionan un soporte automatizado, métodos que indican el cómo realizar el software y tienen un conjunto de principios y procesos que son los elementos que unen a todas las capas en el que se establece la gestión de los proyectos de software y por último se encuentra el enfoque de calidad el cual es la base que soporta la ingeniería del software (SIC). (Pressman, 2006).

## PROGRAMACIÓN MOB

Con el paso del tiempo se han creado y han surgido nuevos enfoques para la realización de programas o productos de software. Loira (2005) expresa que el software es el que “se vende al cliente, que se puede dividir en dos tipos; los genéricos y los personalizados”. Uno de los enfoques más interesantes y llamativos que ha surgido recientemente es programación MOB que se define como un equipo de cinco personas que trabajan al mismo tiempo intercambiando los roles de conductor navegante, en el mismo espacio, en el mismo ordenador, en el mismo programa. No más separación de roles; el equipo piensa y programa como si fuera una sola persona, como un batallón (Meyer, 2014). Este enfoque fue dado a conocer por Zuill (2014) que menciona:

“Los seres humanos son muy malos en la multitarea. El desarrollo es una tarea compleja; Un desarrollador necesita equilibrar la arquitectura de una solución, la escritura de código, gestión de dependencias entre proyectos, y el mantenimiento de proyectos anteriores. Alrededor de desarrollo real hay aspectos a garantizar como el que los requisitos son correctos sean correctamente especificados, la

actualización de documentos, gestión de requisitos, dependencias cruzadas y decidir qué tecnología representa la mejor manera de entregar la solución deseada para el cliente. Estos son sólo una muestra de las tareas que se espera que un desarrollador pueda realizar.”

Estos aspectos son importantes para realizar un código bien escrito que involucra muchas características como la mantenibilidad donde el software debe escribirse de tal manera en que se pueda engrandecer para cumplir con los requerimientos de los clientes y los cambios que se pueden presentar en el contexto por el cual se realizó el software, otra característica importante es la confiabilidad que indica que el software es fiable, seguro y no va a presentar fallos que puedan crear conflictos ya sea legales, contables, etc. También debe tener la característica de ser eficiente en los tiempos de respuesta, procesamiento de datos, utilización de memoria, evitar malgastar los recursos y por último la usabilidad que determina que el software debe ser fácil de usar para que los usuarios que lo vayan a utilizar puedan realizar sus actividades con gusto y eficiencia, pero es necesario reconocer que la capacidad de las personas para realizar tareas puede generar picos y valles en la calidad de las acciones. Por lo que el enfoque programación MOB establece que debe haber un equipo de programadores que van a estar observando y analizando el código, el grupo en su interacción genera una memoria transactiva que según Alcocer (2008)

“es una perspectiva diferente sobre el recuerdo grupal ha sido propuesta por Wegner (1987, 1995; Wegner, Erber y Raymond, 1991; también véase Moreland, Argote y Krishnan, 1996). Los individuos en parejas y en grupos tienen memoria transactiva, que es mayor que las memorias individuales. Esta idea se refiere a las formas en que las parejas y los grupos pueden compartir la carga de memoria de modo que cada individuo sea responsable de recordar sólo parte de lo que el grupo necesita saber, pero todos los miembros saben quién es el responsable de cada dominio de memoria un equipo tiene una fidelidad más alta de los eventos que una sola persona”.

Las actividades como codificar, almacenar y recuperar información se relacionan con la memoria transactiva y es aquí en donde programación MOB se fundamenta ya que un grupo puede recordar más información y datos a través de un sistema de memoria transactiva (Hollingshead, 1998).

Podemos decir que programación MOB es una forma costo- efectiva, de colaboración entre programadores y una forma divertida para realizar trabajo en equipo. Es un enfoque en el que todo el equipo de desarrollo interviene, en donde las actividades como la codificación, el diseño, las pruebas que de acuerdo con Loira (2005), “son un proceso iterativo que se lleva a cabo conjuntamente con la implementación” y el trabajo con el cliente se hacen todo como un equipo.

Se reconoce que programación MOB propicia una práctica de programación sin ego, debido a que no se escribe código en el aislamiento y que cada uno de los integrantes puede tener autoridad. Esta característica se presenta en la programación con pares y en este enfoque debido a que se utilizan técnicas para asegurarse que cada individuo participe y se cumpla el objetivo que es obtener un código de calidad. Es importante señalar que las jerarquías planas dentro del equipo de

desarrollo crean un ambiente más colaborativo y sin ego, debido a que si el equipo no es egocéntrico aumenta la moral y la satisfacción del trabajo que están realizando.

Los resultados del estudio mostraban que los equipos no egocéntricos eran menos propensos a errores, el aprendizaje más rápido, más adaptables a las necesidades cambiantes, más ordenados y eficaces a largo plazo, en cambio los equipos jerárquicos son más aptos sólo para el corto plazo, en pequeñas y bien definidas tareas (Fenton, 2014).

También Zuill (2014), habla sobre las áreas problemáticas que simplemente se desvanecen a medida que se aplica el enfoque de programación MOB , a la vez que se incrementan las habilidades de colaboración, así como también se reduce los problemas de comunicación que constituye una característica y una necesidad de las personas y de las sociedades. Este acto se define como un proceso más o menos complejo donde se relacionan personas y a través de un intercambio de mensajes con códigos similares, tratan de comprenderse e influirse de forma que sus objetivos sean aceptados en la forma prevista, utilizando un canal que actúa de soporte en la transmisión de la información (Román, 2005).

#### ELABORACIÓN DEL CUESTIONARIO

Para la elaboración de este cuestionario, se utilizó la escala de Likert de grados de acuerdo/desacuerdo. El cuestionario abarca lo que es la obtención de datos del encuestado como es su edad, su género, el semestre que cursa actualmente, el enfoque utilizado, como también incluye 13 oraciones en las cuales abarcan diferentes variables como es el tiempo, la satisfacción, la reducción de errores, satisfacción como individuo al trabajar en el equipo utilizando MOB?, etc. Este estudio solo se enfoca en las respuestas obtenidas para esta última interrogante.

¿Qué tan satisfecho te sientes como individuo al trabajar en el equipo utilizando MOB?

#### DESCRIPCIÓN DE LA POBLACIÓN

La población objeto del experimento corresponde a los alumnos de la carrera de licenciatura en Informática del quinto y séptimo semestre de la Facultad de Comercio, Administración y Ciencias Sociales de Nuevo Laredo, de la Universidad Autónoma De Tamaulipas. El total de los estudiantes es de 41 alumnos, de los cuáles ambos grupos tienen conocimiento en la programación en pares y de forma individual y más de un año realizando programas en las diferentes asignaturas de programación.

#### DETERMINACIÓN DE LA MUESTRA

La población total definida para el experimento fue 41 alumnos, pero al momento de realizarse el experimento solo se contó con la asistencia de 32 estudiantes y son los que formaron la muestra de la investigación como se describe en la tabla 2.

**Tabla 2** Población y tamaño de la muestra.

Semestre	Población	Porcentaje	Muestra	Porcentaje
Quinto	23	57%	17	42%
Séptimo	18	43%	14	34%
	41	100%	31	76%

### PREGUNTA DE INVESTIGACIÓN

Las preguntas de investigación que se formularon para el experimento involucran las variables independientes que están conformadas por los dos grupos de estudiantes de la carrera de licenciatura en informática en el cual uno de ellos utilizó el enfoque de programación MOB y el otro grupo utilizó la programación individual; para la elaboración de las preguntas se tomaron tres variables dependientes que son el número de errores, el tiempo y la satisfacción de desarrollar con la metodología MOB; estas se establecieron con el fin de conocer e identificar si el enfoque programación MOB sería adecuado para implementarlo en el ámbito escolar del área de informática y en particular en las clases de programación.

Así entonces la pregunta de investigación quedó establecida como ¿Te sientes satisfecho trabajar en un equipo de programadores utilizando MOB?

De acuerdo en el resultado obtenido es favorable el nivel de satisfacción de programar en equipo que obtienen los alumnos al trabajar con la metodología programación MOB de acuerdo con el porcentaje obtenido en la tabla 1. La satisfacción de trabajar en equipo utilizando MOB resultó favorable obteniendo un porcentaje de 54.9%.

**Tabla 1** Satisfacción programar equipo utilizando MOB

		Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válidos	Completamente en desacuerdo	3	9,7	9,7	9,7
	En desacuerdo	4	12,9	12,9	22,6
	Indiferente	7	22,6	22,6	45,2
	De acuerdo	10	32,3	32,3	77,4
	Completamente de acuerdo	7	22,6	22,6	100,0
	Total	31	100,0	100,0	

### CONCLUSIONES

Este estudio piloto arroja resultados favorables a la pregunta de investigación y aunque solo se trate de resultados preliminares permite vislumbrar que el empleo de la metodología MOB proporciona una mayor satisfacción en su empleo que el enfoque de programación individual.

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# **La logística en la cadena de suministros de la industria del petróleo y gas: una herramienta para disminuir costos**

JOSÉ FERNANDO DÍAZ ZAMORA<sup>1</sup>

*Universidad Tecnológica de Nuevo Laredo  
Nuevo Laredo, Tamaulipas, México*

MARTHA ALICIA RAMÍREZ ROSALES

*Universidad Tecnológica de Nuevo Laredo  
Nuevo Laredo, Tamaulipas, México*

*Lo que se pretende realizar es un análisis de la cadena de suministros de la industria del petróleo y gas en México y parte sur de los Estados Unidos para describir cómo la herramienta de la Logística puede contribuir en la disminución de costos totales, según costos estimados al 2015 costaba la producción a la industria del petróleo y gas extraerlo en promedio \$60.00 dólares americanos en la parte del golfo de México, y el costo actual está alrededor de 30.60 al 11 de febrero 2016. Por lo cual tiene una diferencia negativa de \$30.00 dólares, se trata de apoyar la idea de que utilizando la práctica de la logística puede apoyar a disminuir costos en transporte, distribución, almacenaje, utilización de tecnologías de la información y alianzas estratégicas con proveedores. Ya que en sus objetivos generales están. Disminuir costos, disminuir tiempos, simplificar procesos y aumentar la satisfacción al cliente.*

*Pero que pasa en una industria como la del petróleo y gas donde ha sido forzada a disminuir sus costos de producción al mínimo exponente, debido a variables externas que han provocado la búsqueda de disminuir estos costos, para poder permanecer en el mercado, es necesario continuar buscando disminuir estos costos, por lo cual la logística se ve como posible solución a esto. En esta investigación se trata de dar una posible solución a estas variables. Comparando como la Logística a apoyado a otras industrias a ser más competitivos y rentables utilizando este tipo de actividades.*

**PALABRAS CLAVE**      *Logística, disminuir costos, análisis.*

*The objective is to perform an analysis of the supply chain in oil and gas in Mexico and the southern part of the United States in order to describe how the tool of logistics can contribute to reducing in total costs. According to estimated costs, in 2015 the cost of production in the petroleum and gas industry to extract it was an average of \$60.00 US dollars in the Gulf of Mexico, and the actual cost was approximately 30.60 as of February 11<sup>th</sup> 2016. This shows a negative difference of \$30.00 dollars, which supports the idea of utilizing logistics to support the reduction of transportation costs, distribution, storage, utilization of information technology, and strategic*

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<sup>1</sup> Address correspondence to José Fernando Díaz Zamora, Universidad Tecnológica de Nuevo Laredo, Nuevo Laredo, Tamaulipas, México. E-mail: [jfdo\\_diazz@hotmail.com](mailto:jfdo_diazz@hotmail.com)

*alliances with providers. This is because the general objectives are: reducing costs, reducing time, simplify processes, and increase customer satisfaction.*

*But what happens in an industry like petroleum and gas, which has been forced to reduce its production costs to a minimum exponent because of external variables that have caused the search to reduce these costs in order to remain in the market. It is necessary to continue searching to reduce costs, which is why logistics is a possible solution. In this investigation, we try to give a possible solution to these variables by comparing how the logistics have supported other industries to be more competitive and profitable utilizing these types of activities.*

**KEYWORDS**      *Logistics, reduce costs, analysis.*

# Elaboración de formatos de clasificación arancelaria en modo visual

MELISSA MÁRQUEZ GLORIA<sup>1</sup>  
*Universidad TEC Milenio*  
*Nuevo Laredo, Tamaulipas, México*

ROSA ELENA SEGURA ZEPEDA  
*Universidad Autónoma de Tamaulipas*  
*Nuevo Laredo, Tamaulipas, México*

FRANCISCO JOSÉ BURGOA RAMÍREZ  
*Universidad Autónoma de Tamaulipas*  
*Nuevo Laredo, Tamaulipas, México*

*La clasificación arancelaria como sabemos es parte fundamental del tráfico de mercancías en el día a día, por lo tanto una excelente comunicación entre las partes (cliente-ejecutivo-clasificador) es recomendable.*

*A menudo los clientes y clasificadores se encuentran en desacuerdo con las fracciones arancelarias establecidas, por lo que nos dimos a la tarea de realizar un sistema por el medio se pueda aportar conocimientos sobre otras maneras de presentar información más visual a los clientes en caso de controversia por medio de diagramas de flujos.*

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<sup>1</sup> Address correspondence to Melissa Márquez Gloria, Universidad TEC Milenio, Nuevo Laredo, Tamaulipas, México. E-mail: [mmarquez@burgoaconsulting.com](mailto:mmarquez@burgoaconsulting.com)

# Control de calidad en procesos logísticos

CRISTINA PADRON PERALTA<sup>1</sup>  
Universidad Tecnológica de Nuevo Laredo  
Nuevo Laredo, Tamaulipas, México

*El alto nivel de competitividad que han experimentado todos los sistemas productivos (organizaciones y empresas) en los últimos años, así, como el estrechamiento de los mercados, ha obligado a las empresas a mejorar la calidad en sus procesos garantizando que sus servicios o productos satisfagan las expectativas de sus clientes.*

*Dentro de estos sistemas productivos se encuentran las empresas dedicadas a la logística, y al igual que las demás, para poder lograr esta mejora de calidad en todos sus procesos es necesario conocer y analizar información adecuada que permita realizar una toma de decisiones en tiempo real buscando la mejora del desempeño de las mismas.*

*Esta investigación presenta de la importancia del enfoque de la calidad en las empresas logísticas, esperando resulte un aporte para que sus procesos logren ser más eficientes así como para que los tomadores de decisiones puedan enfrentar de forma rápida y eficaz la competencia.*

## Quality Control in Logistic Processes

*The high level of competitiveness that all the production systems (organizations and companies) have experienced in the last years, like the narrowing of markets, have forced companies to improve the quality of their processes guaranteeing that their services or products will satisfy their client's expectations.*

*Within these production systems, one can find the companies dedicated to logistics, and similar to the others, it is necessary to know and analyze suitable information that will allow decision making in real time searching for the better of the company's performance to be able to accomplish this quality improvement in all their processes.*

*This research presents the importance of the quality approach in the logistics companies, hoping that it results in a contribution so that its processes manage to be more efficient and that the decision makers can face the competition in a quick and efficient way.*

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<sup>1</sup> Address correspondence to Cristina Padron Peralta, Universidad Tecnológica de Nuevo Laredo, Nuevo Laredo, Tamaulipas, México. E-mail: [cpadron@utnuevolaredo.edu.mx](mailto:cpadron@utnuevolaredo.edu.mx)

# **Pensando globalmente, actuando localmente. Comparativo Nuevo Laredo-Singapur**

JOSÉ EDUARDO SEGOVIA MASCORRO<sup>1</sup>

*Facultad de Comercio Administración y Ciencias Sociales  
Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México*

EDUARDO DANIEL DE LEÓN DELGADO

*Facultad de Comercio Administración y Ciencias Sociales  
Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México*

*En la historia del comercio mundial, los aspectos geográficos han determinado grandemente el papel que cada región puede desempeñar en el escenario internacional.*

*Sin embargo, en últimos años, regiones que parecían carecer de situaciones geográficas favorecedoras han despuntado comercialmente, y las que han sido naturalmente favorecidas se han visto obligados a desarrollar nuevas áreas y procesos que les den mayor valor y les permitan mantener una ventaja sobre otros lugares.*

*Singapur ha desarrollado varias áreas que le permiten tener una buena condición económica y comercial, líder a nivel mundial, mismas que Nuevo Laredo puede mejorar, siguiendo algunas líneas de este pueblo.*

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<sup>1</sup> Address correspondence to José Eduardo Segovia Mascorro, Alumno Investigador de la Universidad Autónoma de Tamaulipas, Facultad de Comercio Administración y Ciencias Sociales, Nuevo Laredo, Tamaulipas, México.  
E-mail: [eduardo.segovia@outlook.com](mailto:eduardo.segovia@outlook.com)

## INTRODUCCIÓN

Hace algunos años se hubiera considerado muy extraño comparar económicamente a una ciudad con un país, pero en la actualidad donde se vive en un mundo donde la globalización y el comercio libre van en crecimiento, se han desarrollado nuevos conceptos de geografía urbana como “ciudad global”, donde incluso existen Estados que constan solamente de una ciudad y se les llega a denominar “Ciudad-Estado”.

Sobre lo anterior, la República de Singapur es uno de los principales exponentes de lo que se puede lograr económicamente, pues aun teniendo una superficie territorial y una población que no están dentro de las primeras cien mundialmente, cuenta con uno de los PIB per cápita más altos del mundo, principalmente debido a que posee una próspera economía de mercado libre que depende principalmente de las exportaciones y el refinamiento de importaciones, en especial las del sector electrónico e industrial, que en conjunto hacen de Singapur el puerto marítimo que maneja mayor número de carga anual, en tonelaje y número de contenedores, además de un importante centro financiero internacional y el cuarto mercado de divisas más grande del mundo.

Expuesto lo anterior, se podría decir que Singapur es un caso de éxito y un buen modelo que pueden utilizar ciudades que desean basar su economía en su posición geográfica estratégica para el traslado de mercancías y en adecuarla para ser un importante centro logístico y de servicios agregados, como es el caso de la ciudad de Nuevo Laredo (Tamaulipas).

Nuevo Laredo probablemente no llegará a los niveles de Singapur en corto plazo pues no cuenta con las mismas condiciones, pero si puede llegar a ser un “Nuevo Singapur” en el sentido de que puede seguir algunas líneas de acción que emprendió este “tigre asiático” y adecuarlas a las características de la ciudad, potenciando fortalezas y revirtiendo debilidades.

Las acciones que guiaron a Singapur al éxito, no pueden ser todas aplicadas en cualquier ciudad o país, pero los principios que guiaron esas acciones si se pueden imitar, pues son fundamentos y niveles que sostienen a una sociedad fuerte, que a saber son: educación, gobierno y empresas. Estos tres aspectos creciendo a la par en un ciclo interdependiente y girando en un ambiente libre, sin corrupción y de participación propositiva, pueden crear una fuerte plataforma que sostengan la economía de cualquier ciudad y Nuevo Laredo podría ser el caso que lo compruebe.

# **Competitividad empresarial: México ante el desarrollo económico y los negocios internacionales**

PERLA ÁLVAREZ<sup>1</sup>

*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*Esta investigación analiza la competitividad empresarial en México. Analiza al desarrollo económico y a los negocios internacionales. Identifica las variables que detienen el crecimiento competitivo de México en un entorno global. Analiza los factores que impiden a las ciudades Mexicanas ser competitivas, entre estos la falta de recursos, infraestructura, innovación y el cambio tecnológico como factores de gran impacto en el crecimiento económico (Ramos; 2001). Esta investigación propone una reforma para favorecer el clima de productividad en las empresas Mexicanas y Promover cambios en la estructura productiva del país.*

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<sup>1</sup> Address correspondence to Perla Alvarez, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. Email: [Perla.Alvarez@ka-group.com](mailto:Perla.Alvarez@ka-group.com)

# **Lavado de dinero: impacto en la economía Mexicana y el sistema financiero**

C.P. JOSE ARTURO GARCIA ARIZA<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*Esta investigación se centra en el lavado de dinero, su impacto y consecuencia en el sistema financiero mexicano. Responde a la problemática causadas por estos delitos y por quienes lo comente. El autor identifica los efectos socioeconómicos negativos en México, incremento de corrupción y de organizaciones delictivas internacionales como parte de la problemática generada por este delito. Para resolver esta problemática, el autor propone reformas legislativas a las leyes mexicanas para aumentar no solo las penas y castigos, sino también prevención de manera integral para evitar la comisión de este delito.*

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<sup>1</sup> Address correspondence to C.P. Jose Arturo Garcia Ariza, Division de Estudios de Posgrado e Investigación, Facultad de Comercio, Administración y Ciencias Sociales de Nuevo Laredo, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. E-mail: [jgarcia@alasa.com](mailto:jgarcia@alasa.com)



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## INTRODUCCIÓN

En el siglo XXI no solo nos sorprende por el gran avance tecnológico en un mundo globalizado, sino también por la rapidez con que el crimen organizado se adapta a la sofisticación. Debido a que ahora tienen mayor acceso a la velocidad y facilidad de modernas finanzas electrónicas. Con el fin de burlar las normas, controles y con ello seguir cometiendo delitos que causan graves daños a las sociedades, ya que afecta a la economía y en consecuencia a la posibilidad de desarrollar un país. (Sarmiento, 2012:25). Para abordar el tema de este estudio resulta indispensable saber que es la delincuencia organizada. Cómo y en donde se ubica en el tiempo, de esta manera se inicia el estudio ubicando y describiendo tales fenómenos criminales. Para fijar el ámbito del concepto al que nos vamos a enfocar a desarrollar el término de lavado de dinero es utilizado por diferentes fuentes. Y nos refiere como el proceso en el cual uno o varios actores buscan de ocultar, encubrir o auxiliar o desvirtuar el origen de los recursos provenientes de una actividad ilícita y aparentar que estos son productos de una fuente legítima siendo esta una conducta violatoria de leyes, códigos y disposiciones aplicables. (García, 2009:24) así entonces observamos que la delincuencia como fenómeno social ocurre en la forma de conducta transgresoras de valores individuales o colectivos misma que concatenadas como un todo, adquieren la característica de fenómeno delictivo o delincuencia. (Zaid, 2009:548) hay pocos estudios de profundidad respecto del origen o aparición de la delincuencia organizada y lavado de dinero en el siglo XX, sin embargo, el grueso de los investigadores coincide en señalar el periodo de los años 20 y 30 en Estado Unidos de América como la cuna de la Delincuencia Organizada en su versión moderna, situación que ha saber fue proporcionada por un contexto de restricción o prohibición jurídica del consumo de alcohol, la aparición del delito de lavado de dinero está vinculado con la aparición de las organizaciones mafiosas más sofisticadas en la historia, la mafia de Chicago en la época de prohibición de alcohol fue quien recurrió a la práctica de lavado de dinero, ello obedecía a que gracias al contrabando de mercancía ilegal como el alcohol y tabaco así como las ganancias por las apuestas, los fraudes y casinos ilegales era posible obtener incontables cantidades de dinero en efectivo, en consecuencia era necesario para el mafioso disfrazar el producto de sus actividades ilícitas, según el investigador francés Cuisset señala que: “Termino de lavado de dinero se remonta a la época del mafioso americano Meyer Lanski, había creado en Nueva York toda una cadena de lavanderías que sirvan para bloquear los fondos provenientes de la explotación de casinos ilegales, bastaba con poner las cantidades importantes de dinero que recogía de los casinos dentro de las cajas fuerte de las cadenas de lavanderías y así ingresar esos fondos dentro del circuito bancario” en México estas organizaciones adquieren un auge en las décadas de los ochentas y noventas, su importancia radica en que obtienen recursos monetarios por la producción, transportación y distribución de la droga de México hacia los Estados Unidos inclusive en el interior del país. (Vera, 2006:21). Es así en donde el lavado de dinero impacta negativamente y por completo en el desarrollo de las instituciones políticas. Cambiando a los procesos electorales convirtiéndolos en una falsedad democrática, siendo así que delincuentes organizados puedan transformarse en políticos brevemente y es en donde existen las desviaciones de presupuestos a las arcas de cuentas bancarias de criminales (Buscaglia 2015,27). Uno de los fenómenos que sucede cuando se observa la estructura financiera de un país además de su base monetaria. Podemos finiquitar que las consecuencias económicas que puede sufrir una nación por el accionar del lavado de dinero. Es que la economía se ve reducida en su crecimiento debido de que los recursos que cuenta de su desarrollo se orientan a actividades delictivas. Un efecto simple a nivel microeconómico es el que se produce cuando estas organizaciones delictivas utilizan empresas con fachada que venden

productos a un menor precio del mercado y muchas veces bajo el costo de producción y por consiguiente tienen una ventaja competitiva con las empresas que realmente se manejan dentro de la legalidad (Buscaglia 2015,45). Para estudiar integralmente el fenómeno de lavado de dinero es necesario enunciar tres aspectos, el efecto a nivel mundial que incluye transacciones financieras internacionales a organizaciones terroristas, los efectos socioeconómicos negativos en México y la corrupción el cáncer que alimenta el delito de lavado de dinero.

## CAPÍTULO I

### El efecto a nivel mundial

Con respecto al efecto a nivel mundial que incluye transacciones financieras internacionales a organizaciones terroristas son delitos financieros que tienen consecuencias económicas. Que pueden amenazar la estabilidad del sector financiero de un país o su estabilidad externa en general. Los regímenes eficaces de la lucha contra el lavado de dinero y el financiamiento del terrorismo son esenciales para salvaguardar la integridad de los mercados y el marco financiero mundial, ya que ayudan a mitigar factores que propician abusos financieros, por lo tanto responden no solo a un imperativa moral sino a una necesidad económica (FMI, 2014). Los sacos de dinero en el aeropuerto de Kabul, una ventanilla estratégicamente ubicada justo antes del puesto de inmigración en Antigua y un par de líneas de código de software en un banco en la República Dominicana. Todos estos hechos aparentemente desconectados forman parte del problema mundial de lavado de dinero y que están vinculados a fallas del sector financiero que causaron daños económicos reales a ciudadanos honrados en los países afectados. El lavado de dinero no solo perjudica a personas inocentes que no saben realmente de esta problemática y que se ven involucrados indirectamente pero también puede tener costos muy altos para las economías naciones (Ashin 2012, 38). A continuación analizaremos los aspectos económicos, los paraísos fiscales en donde algunos países contribuyen al delito de lavado de dinero y los aspectos de la modalidad y características off-shore, este modelo que siguen los delincuentes para llevar a cabo el blanqueo de dinero.

#### 1.1 Aspectos económicos

Un informe de la OCDE señala que México ha logrado avances, pero necesita dar mayor prioridad a la persecución del cohecho y garantizar que sus autoridades de procuración de justicia cuenten con todas las capacidades y recursos necesarios. Para investigar toda denuncia relacionada con dicho ilícito, la OCDE concluyó la evaluación de México en cuanto a la aplicación de la convención para combatir el cohecho de servidores públicos extranjeros en transacciones comerciales internacionales e instrumentos relacionados. Después de concluir la investigación la OCDE nos recomienda impulsar las diversas iniciativas de ley para fortalecer el combate a la corrupción, en particular, reformar y aplicar su legislación en materia de responsabilidad legal de las personas morales que cometan el delito de cohecho internacional. Ampliar su legislación en materia de decomiso del producto del cohecho internacional y asegurar que en la práctica, dicha medida sea aplicada. Continuar mejorando el nivel y la velocidad de atención a las solicitudes de asistencia jurídica mutua en casos relacionados con el delito de cohecho internacional. Aclarar expresamente que el cohecho a servidores públicos extranjeros no es deducible para efectos

fiscales. Promulgar leyes para proteger a los denunciantes de actos de corrupción en los sectores público y privado. Modificar la legislación, precisando la obligación de los auditores externos de denunciar ante las autoridades competentes los delitos detectados durante las auditorías que formulen, y que reciban protección ante posibles represalias (OCDE, 2014).

## 1.2 Paraísos fiscales

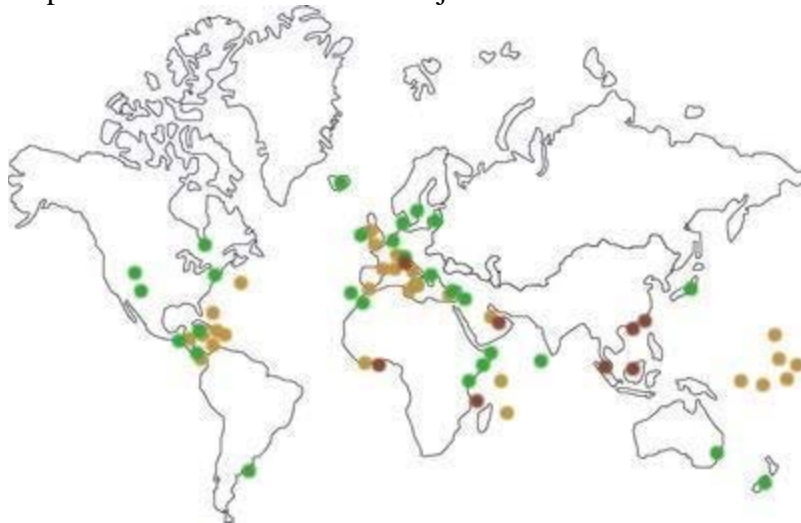
El lavado de dinero es un delito que afecta de manera internacional y en gran medida se debe a la contribución de los llamados paraísos fiscales. Países que eximen del pago de impuestos a los inversores extranjeros que mantienen cuentas bancarias o constituyen sociedades en su territorio. Estos países, son a los que generalmente es transferido el dinero ilegal. Dicha actividad, se lleva a cabo por medio de movimientos financieros a través del sistema internacional de pagos para obscurecer y dificultar el rastreo del origen delictivo. Se identifican como principales características de un paraíso fiscal a la inexistencia de acuerdos para compartir información con otros países. Además de gobiernos relativamente invulnerables a la presión extranjera con alto grado de dependencia económica en el sector de servicios financieros. Algunos países en donde la ubicación geográfica facilita viajes de negocios o a países vecinos con la finalidad de lavar dinero. Con la posibilidad de transferir grandes cantidades de capital a otros países, y recibirlas de ellos sin necesidad de declarar importantes transacciones en efectivo a las autoridades fiscales nacionales. La garantía del anonimato que ofrecen los países que no exigen se den a conocer los nombres de los directores o propietarios que registran sus empresas sin restricciones. Zonas de libre comercio y puertos francos que facilitan el registro de naves aéreas y embarcaciones marinas con atractivos impuestos muy bajos que frecuentemente ofrecen este tipo de lugares, junto con una garantía de discreción y secreto ( OCDE,2013)

## 1.3 Modalidad off-shore

Por medio de estas características es como se lleva a cabo la práctica de la modalidad más común de lavado de dinero por paraísos fiscales. Es el “off-shore”: el dinero se envía por o a través de alguna de las jurisdicciones que ofrecen la formación de negocios o corporaciones instantáneas. Quienes venden en muchos casos filiales en el extranjero de corporaciones nacionales (off-shore) a las que solamente se les permite llevar a cabo negocios fuera del país que otorga la licencia. Están libres de impuestos, protegidas por el secreto corporativo, secreto bancario e incluso cliente-abogado cuando es manejada por terceras personas (OCDE, 2013).

A continuación se ofrece un listado de centros financieros off-shore, en los que se incluyen los países considerados por la Organización para la Cooperación y el Desarrollo Económico (OCDE) como paraísos fiscales:

Mapa mundial de territorios de baja tributación:



**Figura 1.1** Lista de oficial de la OCDE. (2012) Paraísos fiscales 2013 de dirección general de servicios de documentación y análisis.

*Sitio web:* <http://www.paraisos-fiscales.info/paraísofiscal>.

## CAPÍTULO II

### Los efectos socioeconómicos negativos

Respecto a los efectos socioeconómicos y desde el punto de vista económico la Secretaria de Hacienda y Crédito Público declaró y diagnóstico que de acuerdo a al Fondo Monetario Internacional (FMI, 2014). La suma total de fondos blanqueados en el mundo está entre el 2% y el 5% del producto interno bruto mundial, además de que los recursos de la procedencia ilícita pueden ser transferidos con facilidad y de forma inmediata de una jurisdicción a otra. En México se estima que el monto de lavado de dinero es superior a los 10 mil millones de dólares al año lo que representa casi el 4% del producto interno bruto (SHCP, 2012). Esto nos lleva a estudiar el impacto negativo en México, como la estabilidad pública, social y económica.

#### 2.1 Impactos negativos

Hoy en día los países que no adoptan medidas para la prevención del lavado de dinero u otros delitos pueden generar graves efectos en la estabilidad pública, social y económica del país. Uno de los impactos negativos es el deterioro de la moral en la sociedad ya que el enriquecimiento ilícito debilita la escala de valores en la sociedad, al mismo tiempo que genera corrupción en todos los estatus sociales económicos y políticos. La riqueza en manos de los delincuentes tiene como consecuencia elevar la violencia lo cual implica que los delincuentes tengan los recursos económicos para financiar cualquier acto en contra del país y de la sociedad. El incremento repentino de los recursos económicos de un país que no corresponden en un momento de producción de bienes y servicios, puede generar un alza generalizada del nivel de precios, elevando el costo de vida. Al filtrarse dinero ilícito en los sectores económicos de un país, genera condiciones de desigualdad en la competencia lo cual causa quiebre y cierre de empresas legales,

en consecuencia aumenta el desempleo. También otro de los aspectos negativos es el incremento en el gasto público ya que el estado tiene que invertir más en recursos económicos para combatir, controlar y sancionar a las personas implicadas en este delito (Núñez, 2008 pag 66).

## 2.2 Lavado de dinero en la sociedad y en la economía

Los efectos que el lavado de dinero tiene en la economía de un país no son fáciles de identificar, sin embargo, se puede decir que a los primeros que afecta son aquellos que víctimas de este delito, pierden dinero y bienes. Consecuencia de esto las organizaciones criminales aumentan sus capitales lo anterior provoca efectos negativos en la economía nacional e internacional ya que si un lavado de dinero decide invertir en el sector de la construcción. Esta industria incrementa la oferta de bienes raíces sin que haya un crecimiento equivalente de la demanda de los mismos. Posteriormente cuando se venden las propiedades, estas se negocian a precio por debajo de los valores reales, provocando competencia desleal y lo peor haciendo burbujas económicas que al desinflarse traen desempleo, reducción de sector y por lo tanto el caos económico. El lavado de dinero incrementa en nivel general de precios, lo que conlleva una inflación que afecta a la sociedad en virtud de la pérdida del poder adquisitivo de la moneda. Este aumento en el nivel de precios se debe a la entrada de dinero sucio a la economía lo que provoca una mayor presión sobre los medios de pago, lo que implica un aumento de la base monetaria que al no corresponder a la capacidad productiva del país, conlleva un aumento en el nivel de precios, por exceso de liquidez(García, 2009, pag 45).

## CAPÍTULO III

### Corrupción el cáncer que alimenta el delito de lavado de dinero

En la actualidad la corrupción es reconocida por todos los países del mundo, como principal impedimento para el desarrollo de la economía mundial. Del cual se va incrementando la preocupación sobre las cuestiones relacionadas con el lavado de dinero y las transferencias internacionales un asunto que se convirtió en urgente. La Asamblea General de la Naciones Unidas considera la propuesta de crear un instrumento legal que pueda ayudar a los gobiernos a combatir la corrupción y rastrear las transferencias ilegales de fondos. La Conferencia Internacional sobre la Financiación para el desarrollo podría brindar a este instrumento legal un apoyo político importante (ONU, 2002). Otros efectos que van de la mano con el lavado de dinero es el fraude fiscal, la financiación ilegal de partidos políticos, el soborno la corrupción pública y privada, malversación de fondos, el tráfico de influencias entre otras conductas que permiten actuar libremente al crimen organizado con el altísimo nivel de complicidad del que se disfruta. Se trata de mecanismos y procedimientos que compran voluntades al punto de permitir que el lavado de dinero quede impune en el 99% de los casos Al mismo tiempo la corrupción se ha vuelto cada vez sofisticada y globalizada gracias a los avances tecnológicos ya que aunque los países con sistemas de justicia más avanzados no han podido seguirle el paso a la complejidad y creatividad destructiva de las redes criminales que conjugan con la política y la delincuencia organizada (Buscaglia 2015,35). Respecto a la corrupción que hay en México se publica en el diario oficial de la federación la ley anti lavado que a continuación analizaremos, de la mano revisaremos

también el grupo de acción financiera internacional ya que este delito debe de revisarse a nivel internacional.

### 3.1 Ley federal para la prevención e identificación de operaciones con recurso de procedencia ilícita

Durante varios años se ha incrementado este delito en México es por eso que el gobierno se da a la tarea de promulgar una ley en donde persiga esta delincuencia. Esta ley tiene como objetivo principal proteger el sistema financiero y la economía nacional estableciendo medidas y procedimientos para prevenir y detectar actos u operaciones que involucren recursos de procedencia ilícita y regularizar operaciones no financieras que son vulnerables. Por ejemplo los juegos de azar, concursos, sorteos, la compra y venta de inmuebles, vehículos (aéreos, marítimos y terrestres), joyas obras de arte tarjetas de prepago; así como ciertas actividades realizadas por agentes intermediarios. Esta ley fue publicada en el diario oficial el 17 de octubre del 2012, para impactar directamente en el flujo de recursos de la delincuencia organizada limitando así la reinversión de estos recursos en actividades delictivas (LFPIORPI, 2012).

### 3.2 GAFI, Grupo de Acción Financiera Internacional

El Grupo de Acción Financiera Internacional (GAFI) es un organismo intergubernamental creado en 1989 por miembros de ministros jurisdicciones. En el cual tiene como objetivo establecer normas y promover la aplicación efectiva de las medidas legales, reglamentarias y operativas para combatir el lavado de dinero. La financiación del terrorismo y otras amenazas relacionadas con la integridad del sistema financiero internacional. Por consiguiente es un "órgano rector", que trabaja para generar la voluntad política necesaria para llevar a cabo reformas legislativas y reglamentarias nacionales en estas áreas. Desarrolla una serie de recomendaciones que son reconocidos como el estándar internacional para la lucha contra el blanqueo de capitales y la financiación del terrorismo y la proliferación de armas de destrucción masiva. Este grupo forma la base para una respuesta coordinada a estas amenazas a la integridad del sistema financiero y ayudan a garantizar la igualdad de condiciones. Publicado por primera vez en 1990, las Recomendaciones del GAFI se revisaron en 1996, 2001, 2003 y más recientemente en 2012 para garantizar que se mantengan actualizados, relevantes y que están destinados a ser de aplicación universal. También supervisa el progreso de sus miembros en la aplicación de las medidas necesarias y revisa las técnicas de lavado de dinero, financiación del terrorismo, medidas a adoptar y promueve la adopción y aplicación de medidas adecuadas a nivel mundial (GAFI, 2015)

### 3.3 México corrupción e impunidad

México es el tercer lugar en el mundo en flujos ilícitos que pasan por este país, que lleva un proceso de cientos de tracciones que lleva tiempo. Porque no funcionan los controles judiciales, es un país de bajo costo llevar a cabo este delito, el crimen organizado compra edificios y los venden en poco, los índices de impunidad son muy altos. También hay muy pocos controles patrimoniales en donde el sistema de administración tributaria no realiza auditorías a las grandes empresas que financian

campañas políticas, entran dinero a las campañas sin ningún tipo de barreras, el sistema electoral está diseñado para que la delincuencia organizada apoye a los políticos. Todo este dinero que pasa por México, el 20% se termina en la compra de propiedades de los líderes del crimen organizado en Estados Unidos en donde también existe corrupción ya que parte de este lavado de dinero pasa por importantes bancos en donde Estados Unidos solo aplica multas muy bajas a comparación a los miles de millones de dólares que según los bancos son errores que admiten que son lavados a través de su sistema y es donde la impunidad del sector financiero existe también en Estados Unidos porque si aplican las multas correspondientes pueden caer los bancos y generar un colapso económico (Buscaglia, 2015 pag 57).

## CONCLUSIÓN

El lavado de dinero es un problema socioeconómico nacional e internacional, como ya hemos mencionado en el desarrollo de la investigación, en donde el sistema financiero es utilizado como medio de blanqueo de capitales y de dinero, afectando la integridad del mercado internacional. En donde cada país debe tener las medidas adecuadas para prevenir esta actividad ilícita, además de que se debe de dar un adecuado de intercambio en información entre los países. El sistema financiero está en constante riesgo de verse involucrado en el lavado de dinero, a pesar de las medidas adoptadas para prevenir y detectar operaciones de recursos de procedencia ilícita. Este fenómeno dinámico y cambiante; en el que continuamente se desarrollan nuevos métodos para encubrir el origen ilícito de los recursos financieros. Por esta razón es necesario conocer, estudiar y analizar constantemente los nuevos métodos que se pudiesen presentar para encubrir este delito. Por las razones anteriormente mencionadas, las entidades de sector financiero deben tener un adecuado control interno para prevenir, detectar y reportar este tipo de operaciones, además de que las leyes deben ser más rigurosas para aplicar penas y castigos a los delincuentes, sino también prevención de manera integral para evitar este ilícito.



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# **Why do Some Consumers Buy Illicit Goods: Motivations and Ethical Orientation**

SERGIO E. ROBLES-AVILA<sup>1</sup>  
*The University of Texas Rio Grande Valley*  
*Edinburg, Texas, USA*

*With advances in technology and transportation, the opportunities to purchase and adopt illicit goods (goods that are legal in some areas, but illegal in others) have increased. There is more trade of illicit products such as drugs, sex services, illegal fishing, and products made from endangered species. The purpose of this study is to answer why some individuals purchase and adopt illicit goods and what is their ethical orientation. Findings suggest that attitudes and subjective norms influence a consumer's intention to purchase an illicit product. Furthermore, both teleological and deontological orientations influence a consumer's ethical judgement and decision making in purchasing an illicit product.*

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<sup>1</sup> Address correspondence to Sergio E. Robles-Avila, The University of Texas-Rio Grande Valley, 1201 W. University Drive, Edinburg, Texas 78539, USA. E-mail: [sergio.robles01@utrgv.edu](mailto:sergio.robles01@utrgv.edu)

# **The Effect of Women's Ovulatory Cycle on their Consumption Tendency Toward Sexier Fashion Products**

NGOC CINDY PHAM<sup>1</sup>

*The University of Texas Rio Grande Valley  
Brownsville, Texas, USA*

*Previous studies report that ovulatory cycle affects women's preference for relatively more or less sexy/revealing fashion products. However, these studies are limited to lab research. In this study, a field research design is employed to explain why women near ovulation choose sexier and more revealing fashion items than women who are not near ovulation. Also, this study investigates the moderating effects of demographic characteristics such as education, age, income and occupation on the relationship between women's ovulation and their consumption tendency towards sexier fashion items. The Ovulatory Shift Hypothesis and the Theory of Planned Action (TRA) are used as theoretical background.*

*This research is based on field study design that enables to achieve the great degree of external validity. The external validity indicates to which extent the findings from a sample in this study can represent the happenings in the entire population. The field studies. Comparing to the lab research, field research promises a higher external validity (generalizability). Variables including attitude (preference toward sexier and more revealing fashion items), intention (consumption tendency toward sexier and more revealing fashion items), and demographics (age, income, occupation, and income) will be measured in this study.*

*The research will potentially make important contributions to the literature. First, by employing a field study design, the research will explain why women near ovulation show differences toward sexier and more revealing fashion items than women who are not near ovulation. Second, the research will indicate moderating effects of age, education, income, and occupation on the relationships between ovulations and consumption tendency toward sexy fashion items.*

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<sup>1</sup> Address correspondence to Ngoc Cindy Pham, Ph.D. Candidate, Department of Marketing, University of Texas Rio Grande Valley, Brownsville, Texas, USA. Email: [ngoc.pham01@utrgv.edu](mailto:ngoc.pham01@utrgv.edu)

# **The Moderating Role of Human Capital Building Strategy in the Relationship between Market Orientation and Firm Performance**

CAU NGOC NGUYEN<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*Current literature has documented the inconclusive relationship between market orientation and firm performance. Human capital is viewed as an important resource to build competitive advantage. This research suggests that the relationship between market orientation and firm performance is moderated by the level of a firm's human capital building strategy. The high level of human capital building strategy may provide complementary resources, which may enhance the effect of market orientation on firm performance. In contrast, if the firms do not build proper human capital in the market orientation's implementation process, the relationship between market orientation and firm performance may be weakened.*

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<sup>1</sup> Address correspondence to Cau Ngoc Nguyen, Ph.D. Student, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd, Laredo, TX 78041, USA. Email: [caunguyen@dusty.tamiu.edu](mailto:caunguyen@dusty.tamiu.edu)

# Comparing Late Scholastic Christian Thought about Interest with Current Muslim Thought and Practice of Islamic Banking

SHAWN T. MILLER<sup>1</sup>

A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA

*Islam began, officially, in 622, when the Prophet Muhammet went to Medina. Christianity began in 33 when, according to Christian belief, Jesus Christ resurrected from the dead, then ascended into Heaven, and then the Holy Spirit descended upon the Disciples. Islam is 589 years younger than Christianity. If Christianity in 2016 C.E. is 1983 years old, then Islam is only 1394 years old. The development of Islam today, therefore, might be comparable to the development of Christianity during the Late Middle Ages and the Renaissance. The great Christian thinkers of that time were the Scholastics.*

*On the most important points, comparing these two religions would be a work of Theology. On more peripheral matters, however, the different effects of these two religions can be studied in economics and finance.*

*This paper is qualitative explaining the similarities and the differences between what the Roman Catholic Church, as represented by the Scholastics, taught during the Renaissance about debt and usury, and what Islam, as represented by several currently living scholars, teaches about debt and usury.*

*Finally, two questions are asked: Why were the Scholastic theories not practiced? And what will happen to Islamic Banking, which is an attempt by Muslims to practice their religious beliefs about debt and usury?*

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<sup>1</sup> Address correspondence to Shawn T. Miller, A.R. Sanchez, Jr. School of Business, Texas A&M International University, Laredo, Texas, USA. E-mail: [shawn.miller@tamiu.edu](mailto:shawn.miller@tamiu.edu)

## LITERATURE REVIEW

### THE SCHOLASTIC THOUGHT ABOUT CHARGING INTEREST

We are now living 1446 years after the birth of the Prophet Muhammad, and the year 1394 of the Persian (Shia) Islamic calendar, or 1437 of the Arabic (Sunni) Islamic calendar (Islamic Calendar). The years 1394 to 1446 of the Christian era were the time of the late scholastics, which followed after Thomas Aquinas (1225-1274) and ended prior to Adam Smith (1723-1790) (Chafuen 2003, de Roover in Cajetan 2014). It is common for economists to look upon Adam Smith as the first great economist, and to act as if the science of economics did not exist before he invented it (de Roover in Cajetan 2014). This is wrong, however. Aristotle and his greatest disciple, Thomas Aquinas, both wrote about economics, and the greatest minds who have thought about economics studied them and the scholastics who followed them. "Max Weber, before gaining fame as a sociologist, and indeed before applying himself to the study of religion and gaining notoriety for his thesis about the economic concomitants of Protestantism, was a medievalist," (Langholm 1998, page 5, cf. Weber 2003). Adam Smith, who is the father of economics according to Lisa Smith in *Investopedia*, was heavily influenced by scholastic Theology. Mews and Abraham (2007) state explicitly that Smith was ignorant of medieval writings about usury: "Smith was not familiar with medieval discussions of usury, and did not draw on explicitly religious arguments to justify his thesis that enlightened self-interest could provide the best avenue to shared prosperity," (page 6). While it is true that Smith never quoted from medieval or renaissance authors, it does not seem probable that he was ignorant of them. Smith was a great scholar, and he traveled in Europe (Muller 1993). It does not seem probable that a great scholar of that day and age, who traveled in Europe, would completely ignore the medieval authors. One of the assumptions of this paper is that he was influenced by medieval and renaissance scholastics. This assumption is based on statements made by Chaufen (2003) on pages 16, 130, 139, and 143-145. Either Smith was influenced by the late scholastic thinkers, or he just happened to write many of the same things that they had written before him. The influence might have been indirect, through other scholars who lived in the early modern period, or perhaps Smith came to the same conclusions as the late scholastics by beginning with the same ancient sources (Alvey 2004).

Aristotle and Thomas Aquinas both condemned usury, which they defined as the loaning of money at interest. According to their reasoning, money is sterile, it produces nothing, therefore if someone loans money to another, s/he should demand only the same amount in repayment, because the creditor incurs no possible loss from loaning it out, and the borrower gains nothing from holding the money for a time, therefore charging interest on the loan would be demanding something for nothing, which would be unjust. The person who loans at interest is therefore unjust and guilty of sin. As to the one who borrows money and pays interest on it, some said that he was guilty of sin because he caused the person loaning the money to commit the sin of usury. Causing another person to commit sin is sinful. Others said that people borrow money because they needed it to survive, and their need made their act not sinful, because except for extreme acts, like murder, everyone is allowed to do what is necessary to survive. From this point, some began to consider cases in which a person might borrow money at interest even when not needed to survive. In this, there was debate. Some said that a man should not only survive, but also live a decent human life. Therefore, if a person needs money to live a decent human life, then s/he may borrow it at interest so as to live a decent human life. Then some considered the case of a merchant who borrows

money not to survive, nor to live a decent human life, but to invest in a profitable business venture. Some said that this was sinful, because trying to gain more money than is necessary to live a decent human life is sinful. Others said that this was not sinful (Langholm 1998, chapter 4).

If paying interest on a loan is not sinful, even when not absolutely necessary, then charging interest on a loan would not seem to be sinful either, at least not in some cases. Usury, however, was still considered to be sinful. The logical conclusion, therefore, is that not all charging of interest on loans is usury.

Perhaps the greatest scholastic following Thomas Aquinas was Thomas de Vio (1469-1534), who is known to history as Cardinal Cajetan (de Roover, xix). Though the time separating him from us is greater than the time separating him from Aquinas, the economic situation at the end of his life might have been more similar to our own than it was to that experienced by Aquinas. By 1534, Europe had cities with hundreds of thousands of inhabitants, and the discovery of America by Columbus in 1492 made it so that there was global trade with goods and gold, silver too, and many people, being carried across oceans from America and Asia to Europe, and back. The simple, rural, agricultural economy of the middle ages was ending and the complex modern economy was beginning. Cajetan helped adapt medieval scholasticism to the early modern period. "Cajetan's treatise helped to lift the barriers that still opposed the march of capitalism," (de Roover, xxxii). As far as this paper is concerned, his most relevant work was titled *Cambio*, which he wrote in 1499 and which was published in 1506. While he was bound by his Theology to promote the Church tradition which forbid usury: "Eternal damnation is being prepared for money changers, as usurers, who set a greater or lesser value on a mark of gold or the return of any money whatsoever according to the length or shortness of median time between giving and receiving," (paragraph #287, page 48), he understood and explained that there were good reasons other than time for demanding that more be returned for a loan than was given: paragraph #284 considers danger, or risk, as a legitimate reason to demand that more be returned than was given: "Just as Peter buys money that a bad debtor owes to John for less than it is worth because the item is constituted under such labor to possess it, so also money that is not present, inasmuch as it is an item lying under danger and the expense of transfer, is bought for less than its absolute value," (page 47).

Cajetan goes as far as he can by allowing interest, but not usury, in paragraph #257: "Equality is likewise preserved if someone who is exchanging coins gives less inasmuch as the coins that he had to give were more serviceable to him. . . . Hence, a person who has a golden ducat may ask for a soldo from someone who wishes to exchange small money for it because it is more serviceable to him, and this is not a sin," (Cajetan 2014, page 37). Though the specific case here is trivial, involving simply the breaking of a large unit of currency into smaller units, like breaking a twenty dollar bill into four five dollar bills, the implications are huge, for this points to the subjective value of money, even in the same place, at the same time, and in the same currency. Money has no inherent value; its value depends upon how much it facilitates the exchange of goods and services. With this in mind, if a person wants to purchase several small items, each from a different seller, then many low-denomination coins will be worth more to him or her than one large denomination coin. By exchanging one large denomination coin, such as a gold ducat, for several small denomination coins of which the total legal value is equal, the subjective value to the individual making the exchange is increased. To him or her, many small coins are worth more than



one large coin, even though the sum of the small coins is equal to the legal value of the large coin. In U.S. currency, the subjective value of four five dollar bills might be greater than the subjective value of one twenty dollar bill, because the individual wants to buy four items, each from a different seller, and those sellers might not have change. I can imagine someone planning to attend a church worship service. At the service, there is a normal collection for the normal expenses of the church. Then there is a special collection for the building fund. Then, after the worship service, there are children outside the church selling bakery to raise money for their trip somewhere. Then, in the parking lot, there is a homeless person begging for money. In such a situation, four five dollar bills would be much more useful, and therefore more valuable, than one twenty dollar bill. If, on the morning before the worship service, the person went to his neighbor with a twenty dollar bill and asked for change, the neighbor would be justified in giving only three five dollar bills and four one dollar bills. The sum of three fives and four ones is less than twenty, but the subjective value of the three fives and four ones would be greater than the subjective value of the twenty.

In paragraph #280, Cajetan again allows the charging of interest, but not usury, when he writes that "It is, however, permissible in regard to future exchanges to make a decision according to present calculation that varies in accordance with the different outcomes at different times, just as in other exchanges," (page 43). He uses the examples of war and bad weather, both of which would make food scarce so that the price of food would increase. According to Cajetan, it is illicit to charge any extra simply because of the time of a loan, because if nothing has changed other than the date then the amount returned should be the same as the amount loaned. If, however, something other than the date has changed, and the change affects the value of the thing loaned, then more could be demanded upon return. Just as food can grow scarce because of war or bad weather, so too money can grow scarce. In a town where a fair is held there would be more money than on a farm far away from any city. The value of the same coins differed in Flanders as compared to Genoa. A businessperson can anticipate the difference in subjective values in different places, and in different situations, therefore s/he can demand a greater quantity to be returned than was given. If one were to give out wheat during a famine, s/he could rightly demand a larger amount of wheat to be returned during a period of plenty. If one were to loan ten coins in a farming village far from any city, s/he could demand to be repaid with eleven coins of the same type when inside a city. Equity is in all cases to be the guide. When making an exchange, the two parties should trade equal values, not necessarily equal quantities. "It is clear . . . that the universal rule for exchanges is that the equality between a thing and another thing is to be preserved, so that, then, an equal is to be given for what has been received, and vice versa," (paragraph #252, page 35). As value is subjective, it often happens that the values of two different quantities are equal, even if they are quantities of the same items and of identical quality.

The insistence on equality in transactions might condemn all profit as sinful. Profit is essentially the excess of value gained by selling something for a higher price than one paid for it. To many a medieval mind, that is unjust, because unequal. There is a great problem, however, because profit is the factor that motivates businessmen to do business. Business is beneficial to society. Merchants bring goods from foreign lands where they are plentiful to lands where they are not, and thus make it possible for people to enjoy goods that are not normally found in their own countries. Retailers make goods available in convenient quantities, at a convenient location, and at convenient times. Manufacturers combine elements found separate in nature to make new products that improve lives, and these manufacturers create opportunities for many workers to

support themselves and their families. Without profit, businessmen would not be motivated to do business, and then the benefits of business would be lost to society. Christianity advocates charity; if people act because of charity, then they do not need profits to motivate them. History and common experience show that most folks are not motivated by charity, so without the profit motive not much would be done. It took centuries to realize that. "Justice is the virtue of the marketplace. Charity is the virtue by which we share our surpluses with those who are too poor to participate in the market. In prescholastic thought, this distinction was not at all clear. It was established in the thirteenth century by a confluence of ideas transmitted by Gratian, Peter Lombard, and the translators of Aristotle. The scholastics would continue to preach charity, as the Fathers of the Church had done before them, but in a market economy, to base a systematic doctrine of ethics in exchange on charity would run counter to the purpose of maintaining a workable Christian economic system among fallen men. The practical applications, the ethical ideal of the Gospels must compromise with the facts of human nature, and it is a sad fact that the charitable must count on uncharitable responses from the majority of their fellow men. Preaching charity as a general norm of market conduct would reach only those who desired to be virtuous, and the end effect would be an accumulation of wealth in the hands of the vicious," (Langholm 1998, pages 155-156, Elegido 2009).

The elements of the interest charge are normally determined, today, by the risk involved, the expected inflation rate, the transaction costs, and the opportunity cost. In the paragraphs quoted above, Cajetan states that one who loans out money may demand that a larger amount be returned because of the risk involved, the difference in money values in different places or at different times (this corresponds to inflation), the transaction costs, but not the opportunity cost. Only the opportunity cost element of interest remains illicit according to Cajetan. There were others who allowed for opportunity cost: "According to authorities, a creditor, when the debtor is in arrears, can seek the interest of a ceasing profit in such a way that he can seek as much as he would have probably gained with that money if he is an industrious merchant," (paragraph #398, page 101) but Cajetan disagrees with them: "the authorities are not to be followed as a model in this matter because they contradict even one another," (paragraph #404, page 102). Even though Cajetan allowed for almost every element that composes interest charges, he never wavers in his condemnation of increasing the interest rate to account for opportunity cost: In paragraph #232 he writes that "In a contract of buying and selling, there can be no calculation of time," (page 20).

#### MUSLIM THOUGHT ABOUT INTEREST, AS MANIFESTED TODAY BY ISLAMIC BANKING

Considering the fact that Islam is approximately the same age as Christianity was during the lives of the scholastics, most especially Cajetan, it could be thought that their thoughts about these subjects are about at the same level of development as Christian thought was during the scholastic period. As Christianity came first, relative to Islam, Christian thought had to be original, whereas Muslim thought could be largely copied from Christians, meaning that Muslims could skip the scholastic period and go directly to the equivalent of the modern period, which in Western economics was dominated by Protestantism. Some think that this has happened (Zulfikar 2012), but they have not proven their case.

Contrary to what some like Zulfikar (2012) say, there is evidence that Muslim thought about finance is developing much as Christian thought about finance did during the scholastic period. The greatest manifestation of this is Islamic banking. Islamic finance was begun in Malaysia in 1963 when devout Muslims saved their money with the intention of using their savings for a pilgrimage. These savings were invested in the economy to earn a return that was not interest as from a conventional bank (Sufian 2007). The first Islamic bank was established in Egypt later that same year (Haron and Ahmad 2000). Islamic banking became international with the independence of Muslim majority nations from their colonial overlords (Hanif 2014) and the rise of Islam as a political force in the 1970s (Haniffa and Hudaib 2007, Dusuki 2008); and it has been growing rapidly: “Since 2000, the Islamic banking industry has been growing at an average rate of 19 per cent per annum in terms of assets,” (Sufian 2007, page 177). By 2008, there were Islamic banks in 38 countries (Dusuki 2008). At the end of 2012, the global volume of Islamic banks was \$1.46 trillion (Hanif 2014).

The purpose of Islamic banking is clearly Theological (Haniffa and Hudaib 2007, Dusuki 2008, Hanif 2014, Ahmad 2000, Siddiqui 2001, Rosly and Baker 2003). More than anything else, they try to provide banking services without charging or paying interest (Ariff 1988, Sufian 2007) because that is forbidden in *The Quran*, four times, in Surah Al-Rum 30:39, Surah Al-Nisaa 4:161, Surah Al-i-Imran 3:130, and Surah Al-Baqarah 2:275 (Haniffa and Hudaib 2007, Hanif 2014). Siddiqui (2001) states that “Prohibition of interest is ordained in Islam in all forms and intent. This Prohibition is strict, absolute and unambiguous,” (page 1).

In addition to avoiding interest, a negative thing, there are positive goals that Islamic banking tries to achieve, of which there are “socio-economic development and the alleviation of poverty,” (Dusuki 2008, page 136) “promoting Islamic values and way of life towards staff, clients and general public,” (ibid. page 138), making it possible for females to participate in banking separate from males because in traditional Islam nonrelative males and females do not spend time together, creating jobs, supporting charitable organizations, and “sponsoring Islamic educational and social events,” (Haniffa and Hudaib 2007, page 102). Islamic banks must pay zakah, which is the required donation. In addition, the bank may donate extra to charitable causes, which in Arabic would be named *saddaqa*, but Dusuki claims that such generosity is contrary to their duty as representatives of shareholders and clients. They are responsible for the funds entrusted to them, and are not at liberty to give away what is not theirs. Dusuki explicitly states that Islamic banks should act according to the thought of Milton Friedman on this issue: the shareholder investors can freely give as much of their money to charity as they please, but the managers of the Islamic banks have as their duty not the promotion of charities but the earning of profits without violating the teachings of Islam.

Just like the Christian scholastics, Muslims have thought of ways to operate banks without practicing usury, but whereas the Christian scholastics looked profoundly into the nature of usury, and concluded that charging interest to compensate for risk, inflation and transaction costs was not usury and therefore is permitted, Muslims have found ways to provide the benefits that banks normally provide but without interest. First of all, depositors in Islamic banks are not paid interest, rather they share in the profits of the bank. Their deposits are considered to be equity in the Islamic bank (Haron and Ahmad 2000). In Islamic banking, there are no simple contracts in which the bank loans a certain amount to a borrower who agrees to repay that amount with interest. Rather,

in Islamic banking there is either an asset-backed trading contract, or equity financing with risk sharing (Dusuki 2008).

One common type of asset-backed trading contract is Murabaha, in which the client informs the bank that s/he needs to purchase something, such as a piece of equipment, and then convinces the bankers that s/he will be able to pay for it at some moment in the future. The bank then buys the requested item and sells it to the client for a price higher than the bank paid for it. The client benefits because s/he does not have to pay immediately. The bank profits from the difference between what it paid for the item and the price that it charges the customer to purchase the item. The amount of the mark-up is based upon the Interbank Offered Rate. The I.B.O.R. is an average of interest rates offered by other banks. If all goes well, the Islamic bank earns the same amount of profit on this transaction as a conventional interest-charging bank would earn. The difference is just that in conventional banking the bank would loan the client cash and s/he would purchase the needed item, whereas in Islamic banking the bank purchases the item for the client (Haniffa and Hudaib 2007, Hanif 2014).

Another type of asset-backed contract is Salam, which is used for agricultural loans. In Salam, the farmer informs the bank that s/he wants cash to buy seed or equipment that is necessary to produce a crop on his/her land. The bank then estimates the future value of that crop, and signs a contract with the farmer in which the farmer agrees to sell the future crop to the bank for a price lower than its value. The bank will then be able to immediately sell the crop for a profit. Islamic banking considers this to be morally permissible because the bank bears the risk that the crop will fail and they will receive nothing, and the risk that future prices will be lower than expected, so that they will not be able to sell the crop they buy for a profit. This sharing of risk with the farmer is a crucial aspect of the transaction that makes it morally acceptable (Haniffa and Hudaib 2007, Hanif 2014). This mirrors the scholastic thought about which I wrote above on page eight.

Ijarah is another method that Islamic banks use to service their clients and earn a non-sinful profit. In Ijarah, the client wants something like, perhaps, a house, but cannot afford to buy it outright. If the bank is convinced that the client has an adequate regular income, then the bank will buy the item and rent it to the client. The price of the item would be divided into small units, each representing partial ownership. Each month, the client would pay the rent on the item, and also buy one of the small units of ownership, until all the units of ownership are held by the client (Haniffa and Hudaib 2007, Hanif 2014). For example, the Islamic bank might purchase a house for \$100,000 and rent it to their client for \$750 each month. They would divide the price of the house into four hundred units, each worth \$250. The client would gradually buy the units of ownership until s/he owned the entire house, at which time s/he would no longer pay rent. What is more, as the client's portion of ownership in the house increases, s/he will keep some of the rent money, so that when the client has purchased half of the units of ownership, then s/he would keep half of the \$750 rent. The client could agree to purchase one unit of ownership every month, until his/her rent payment to the bank decreased enough so that s/he could afford to buy two units of ownership each month, and then three. In this way, the client's monthly payment would always be close to \$1,000. Ijarah is for all practical purposes the same as a mortgage, except that the arrangement is made in such a way that there is no interest involved.

Equity financing with risk-sharing requires the Islamic bank to invest in the business that needs cash. Instead of borrowing money from the bank and then repaying it with interest, the business would request that the bank invest in it, and then share in the profits of the business if there are any. This is called Musharaka, or partnership. This is a limited liability partnership in which the bank is considered to be a silent partner providing funds but not participating in the management of the business and not liable for any losses above the initial amount that the bank invests (Hanif 2014). Haniffa and Hudaib (2007) write that this is like venture capital.

Islamic banks are restricted in what types of businesses they can finance. They cannot finance a business whose primary business is doing something or making something that is forbidden in Islam. Examples of such businesses would be pornographers, producers of alcoholic beverages, sellers of pork, or banks that charge interest. Since most businesses in the world today either charge or pay interest in one way or another, Islamic banks are not prohibited from investing in all businesses that charge or pay interest, as long as the charging of interest is not their primary business. In some cases, the Islamic bank determines how much of their profit was gained from the charging of interest, and the Islamic bank then gives that amount to sadaqa charity, over and above the zakah which it is required to give anyway (Haniffa and Hudaib 2007).

In addition to all of the above, Islam prohibits investing without any knowledge of the investment (Ayub 2007, Haniffa and Hudaib 2007) and gambling (Hanif 2014). To avoid the first fault, the business in which the Islamic bank invests must disclose its activities to the bank so that the bank has all the relevant information that it needs. To avoid the second, the bank must assure that there is some work, intellectual or physical, expended to earn the profit. Intellectual work could mean thinking about the future and acting in a way that will be profitable if the future turns out as expected. Since the future is never known, making decisions based on predictions is always risky, but it is not considered gambling, because if profit is gained it will be thanks to correct predictions, and if loss is incurred, it will be due to incorrect predictions; in neither case will pure luck be involved (Haniffa and Hudaib 2007).

Though the primary purposes of Islamic banking are Theological, the Islamic banks must compete against conventional banks, and against each other, therefore they must operate efficiently and provide a return to their investors that is not significantly inferior to the return provided by conventional banks. Research shows that their profitability, as measured by return on assets, is not significantly different than that of conventional banks (Samad 2004, Hanif 2014). According to Rosly and Baker (2003), the Islamic Banks in Malaysia have a higher return on assets than conventional banks, but they are not more efficient, so their superior profits are not due to superior operations. Haniffa and Hudaib (2007) state that “good corporate governance practice . . . is still lacking among IBs,” (page 106). Sufian (2007) found that smaller Islamic banks were less efficient than bigger Islamic banks, which would normally cause them to be less profitable, but “the smaller Malaysian Islamic banks tend to be more profitable,” (page 188). The negative effects of inefficiency and poor corporate governance seem to be compensated for by the competitive advantage Islamic banks have in attracting depositors and borrowers. Devout Muslims may not use conventional interest-charging banks even if those conventional banks offer superior service (Hanif 2014), so Islamic banks need only to be equal to or better than other Islamic banks. If an Islamic bank competes successfully with other Islamic banks, then it will earn normal profits. Haron and Ahmad (2000) claim that depositors choose Islamic banks for their superior returns, not

for religious reasons. That is a dissenting voice, but it came before most of the others, so they who came after seem more credible because they have more recent information.

#### LOOKING TO THE FUTURE

The paper Mews and Abraham (2007) is very similar to mine, but mine differs from it in two respects. First, nine years have passed since 2007. During these past nine years, Islamic banking has grown considerably, so that it has emerged from the theoretical/ideological and into the practical. Also during these past nine years, the United States and indeed the whole world went through a great financial crisis, and many more today than in 2007 question whether the conventional world banking system is good or bad. Second, my paper compares current Islamic banking to Roman Catholic Christian teachings about usury and debt at the approximate moment when the Roman Catholic Christian religion was as old as Islam is now, and it ends with thoughts wondering if Islamic banking will develop in the near future in the same way as Western banking did.

According to Hanif (2014), the prohibition of charging interest is based upon not only the four verses in *The Quran* mentioned above, but also on similar verses in *The Old Testament*. He says that “it is the responsibility of all true believers in God (Jews, Christians and Muslims) to give up interest based transactions from their personal lives immediately and input their energies collectively to design promote and implement a financial system free of interest,” (page 7). If the word ‘usury’ were used instead of ‘interest’, then Cajetan and most other scholastics would agree with Hanif. To be very precise, the Arabic word in *The Quran* is neither ‘usury’ nor ‘interest’, but ‘Riba’, which Hanif defines as: “charging predetermined additional amount on a loan extended based on length of credit period,” (page 7). This corresponds exactly to what Cajetan would call usury. Charging for nothing other than time is usury, and that is sinful, according to Cajetan, but much of interest is not a charge for time, but rather a compensation for risk, and transaction costs, and inflation. There seems to be fundamental agreement between scholastic thinkers and today’s Muslims on this point, so why is there no Christian or Catholic banking system similar to Islamic banking?

A Christian banking similar to Islamic banking could have developed, but it did not. In 1462, the Franciscans started a bank. The charging of interest was forbidden for Christians, but there was demand for loans, so the wealthy borrowed from Jews, and the poor borrowed from loan sharks who charged exorbitantly high interest rates. The high interest rates sank the poor further into poverty. In an effort to help the poor receive the loans they wanted without paying high interest rates, the Franciscans founded the 'Mountain of Piety', which was a type of pawn shop. Poor folks could bring something to the bank as collateral and receive a loan in return. There was an interest rate of 6%, but that was not usury because it was not for the profit of the bank but only to cover the expenses of operating the bank. The initial funds that were loaned out to the poor came from charitable contributions, but before long the "Mountain of Piety" began paying a small rate of interest to its depositors. This idea spread somewhat, and it lasted almost five hundred years, but it never became very big and now it is completely gone (Mews and Abraham 2007).

Perhaps a Christian form of banking similar to Islamic banking did not develop because of the different ways in which adherents of the two religions believe that their scriptures are true. Muslims believe that *The Quran* was dictated to the Prophet Muhammad by God, and every word, indeed every letter, is true. They venerate the text, and use the letters and words extensively in their art. Devout Muslims memorize the entire *Quran*, and even though there are many translations, only the original in Arabic is considered to be genuine. Among Christians, there is great disagreement about *The Bible*, ranging from some Fundamentalist Protestants whose beliefs about *The Bible* are the same as the Muslims' beliefs about *The Quran*, to the other extreme of liberal Protestants who believe that *The Bible* is nothing more than a book which was written very long ago by ignorant, superstitious, misogynous men. Between these two extremes, there are the teachings of the Roman Catholic Church, according to which *The Bible* was inspired by God, but written by men, and maybe partially by women. God's inspiration prevented the sacred authors from writing anything that was substantially contrary to faith or morals. In other areas, such as history or science, there might be and in fact there probably are some inaccuracies. Even regarding faith and morals, *The Bible* is sometimes to be interpreted symbolically, not literally. This tradition goes back to the early centuries of the Church, with Origen, through the medieval period with Thomas Aquinas, and into the Modern Age with many theologians. Christians, therefore, are more flexible in their interpretation of *The Bible* than Muslims are in their interpretation of *The Quran* (Hardy 2006).

Will Islamic banking fall by the wayside of history just as the Mountain of Piety did? There seems to be little real difference between Islamic banking and conventional banking. It seems that Islamic banks try to do all the same things that other banks try to do, and those who need loans end up paying very nearly the same amounts as they would pay to conventional banks. What does it matter if one pays rent on a house and gradually purchases it, or if s/he borrows money to purchase the house and then gradually repays the bank with interest? The monthly payments are very nearly the same either way.

In the West today, Christian Theology and financial science are separated by a chasm such that the experts in one field ignore the other field. This is evident in the sayings and writings of Pope Francis, who manifests his misunderstanding of modern finance so often that there is no need to refer to any one source here. On the other side, financial scholars seem somewhat less ignorant about religion than religious leaders are about finance, as evidenced by several articles in such respected journals as *Journal of Business Ethics* and *Journal of Markets and Morality*. Barro and McCleary (2003) is one example of research on religion and economics done by the nation's top scholars. It is relevant to my paper in that it shows that belief in Heaven and Hell tends to increase economic growth, but frequent attendance at religious community worship services tends to decrease economic growth. Muslims worship more, on average, than members of any other religion, and they are more likely than members of any other group to believe in Heaven and Hell. In the past, Roman Catholics were more likely to believe in Heaven and Hell, and to worship frequently. Muslim religiosity now is similar to Roman Catholic religiosity in the past. Even though there has been some high quality research conducted and published since 2000, religion is neglected by finance scholars, though not as much as finance is ignored by religious thinkers. Six hundred years from now, will historians of thought look at Islamic banking like historians today look at scholasticism, as an interesting phenomenon that failed to develop practical consequences?

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- The following link connects to much information about Islamic Banking, none of which I used in this paper because the link is too new and my paper uses only accepted academic resources. - <http://www.mbri.ac.ir/Default.aspx?PageName=news&ID=50373>.

# Economic Inequality and Small Business Survival

CHRISTOPHER J. BOUDREAUX<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

STEVEN W. BRADLEY

*Hankamer School of Business, Baylor University  
Waco, Texas, USA*

*Inequality is a phenomenon that affects the entire community, especially in business. Yet, studies on inequality in business research is scarce. We attempt to change this by utilizing data from the Kauffman Firm Survey in order to examine how economic inequality influences firm exits in the U.S. from 2004-2011. Using income ratios as measures of economic inequality, the results suggest that inequality improves the rates of firm survival. When using the ratio of 90th and 10th income percentiles as our measure of inequality, a one standard deviation increase in inequality is associated with a 14% reduction in firm exits. However, the effects of inequality are unequally distributed. Our findings suggest that economic inequality matters more at the bottom of the income distribution than at the top. While inequality involving the bottom 10th income percentile plays a significant role, we find no evidence of a statistically significant relationship between inequality and firm exits when the measure of inequality is the ratio of the 90th and 75th income percentiles or the ratio of the 90th and 50th income percentiles.*

**KEYWORDS**     *Inequality; firm survival; small business, firm exits*

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<sup>1</sup> Address correspondence to Christopher J. Boudreaux, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd., Laredo, Texas 78041, USA. E-mail: [cboudreaux@tamiu.edu](mailto:cboudreaux@tamiu.edu)

## INTRODUCTION

Social and economic inequality have been the subject of many concerns across most societies. Perhaps the most recent and famous evidence on inequality is presented by Thomas Piketty in his book, *Capital in the 21<sup>st</sup> century*, which argues that one source of economic and social inequality is capitalism. That is, the rate of return on capital and investments exceeds the rate of return of the economy (Piketty, 2014). Over time this discrepancy creates an unequal divide between the rich and poor. More generally, society is increasingly concerned that more money is becoming concentrated in the hands of fewer persons. Michael Porter argues that, in contrast to Piketty, inequality is more closely associated with government policy and institutions rather than capitalism (Porter & Porter, 1998). He argues that much more attention should be given to the sources of inequality (e.g. poor education and training systems for individuals, and barriers to entry for firms). While much has been written on the sources of social and economic inequality, very little attention has been given to the effects of inequality, particularly in the business world. Integrating economic inequality into business models may help further our understanding of these relationships.

One reason we may desire to integrate social and economic inequality into the scholarly business audience is to help us understand how corporations can respond to differences in inequality—both altruistically and selfishly. For instance, inequality may present unique opportunities for corporations to engage in corporate social responsibility (CSR). Conversely, inequality may also influence a firm’s survivability by presenting new profit opportunities or new segments and affecting the competitiveness of a market or community. Yet another possibility is that inequality may present a dismal business outlook.

Our contribution to this subject is twofold. First, we examine how economic inequality may affect the business community at different levels of interaction. We provide this framework by analyzing the relationship between inequality and the business community at the micro-level (employer-employee relationship), the meso-level (consumer-firm relationship), and the macro-level (community). Second, after developing these frameworks, we test two hypotheses about the inequality-business relationship. We analyze how inequality at the Metropolitan Statistical Area (MSA) affects U.S. firm exits using data from the Kauffman Firm Survey for the years 2004 through 2011. We use income ratios as measures of economic inequality, and the results suggest that economic inequality improves the rates of firm survival. We find that, when using the ratio of 90th and 10th income percentiles as our measure of inequality, a one standard deviation increase in inequality is associated with a 14% reduction in firm exits. However, the results suggest that economic inequality matters more at the bottom of the income distribution than at the top; no statistically significant relationship is found between inequality and firm exits when the measure of inequality is the ratio of the 90th and 75th income percentiles or the ratio of the 90th and 50th income percentiles.

## ECONOMIC INEQUALITY AND FIRM SURVIVAL

The first important detail to understand is that inequality is a social phenomenon, often occurring at different levels of the business organization. Labor economics argues that wage inequality may

affect firm performance. However, the direction and magnitude of the effect may depend on the level of each business relationship.

#### Micro-level of business organization

At the micro-level (employee-management), Heyman (2005) finds that more wage dispersion within the firm increases profitability. However, other evidence exists that suggests wage inequality and performance are unrelated in the National Basketball Association (Berri & Jewel, 2004). Still other evidence argues that inequality may lead to worse firm performance. Ku & Salmon (2012) conduct a performance related experiment and find that wage inequality between participants can decrease firm performance. Therefore, at the micro-level, the literature is mixed on the direction and effect of inequality on firm performance.

#### Meso-level of business organization

At the meso-level (firm-firm), Rowley et al. (2005) study network and clique relationships in banking and provide evidence to suggest that social inequality increases firm exits from cliques. Jovanovic (1982) develops a theoretical model to examine how firm entry and exit decisions affect industry evolution. As it relates to our study, he argues that there is a relationship between inequality, as measured by the gini coefficient, and the *variability* of profits. While average profits are not expected to be correlated to inequality, the distribution is assumed to be related to profits. Due to the evolutionary aspect---the strongest survive---mature industries tend to be more profitable than others. According to this theory, these industries tend to also be less equal. Audretsch & Mahmood (1994) discuss how industries with large variances in firm size and output experience high growth but low odds of survival. Only the efficient producers will survive while everyone else will eventually exit the industry. Hopenhayn (1992) also discusses firm entry and exit dynamics. He argues that mature firms face an increased chance of survival and also face a higher average size, profits, and value.

#### Macro-level of business organization

At the macro-level (firm-community), many studies have argued that inequality leads to low levels of economic development---at least in the short run. The Kuznets curve (Kuznets, 1955) argues that as a country develops, market forces will at first increase and then decrease economic inequality. At the MSA level, Chetty et al. (2015) has provided recent evidence to suggest that income inequality is associated with lower levels of intergenerational mobility---a finding known as the Great Gatsby Curve (Corak, 2013). Boudreaux (2014) argues that the negative relationship between inequality and income mobility is partly mediated by a high quality of economic institutions, low corruption, and institutions that facilitate entrepreneurship. Most of the literature at the macro-level perceives inequality as a negative factor---one that may harm the economy and the business organizations therein. However, as we discussed at the other levels of organization, the effect of inequality on business is more ambiguous.

## Hypotheses development

Ultimately, if there is a linkage between inequality and a firm's prospects for survival, we expect it to operate through a firm's strategic orientation via two channels: (i) entry barriers, and (ii) the degree of competition.

### Entry Barriers

Inequality may affect how a firm structures its competitive advantage, specifically through altering barriers to entry. As previously mentioned, the literature supports the notion that incumbents in an industry that do survive, will be larger, more profitable, and become more efficient at production, perhaps by gaining important cost advantages from economies of scale (Hopenhayn, 1992; Audrestch & Mahmood, 1994). This factor makes it increasingly difficult for new entrants to compete in the market. As Porter & Porter (1998) argue, one source of inequality is government policy, and government policy can create barriers to entry. In turn, these barriers to entry may influence the degree of inequality as some firms increase their share of the market.

Both market share and government policy may impose entry barriers on new entrants, which only acts to exacerbate inequality. However, while inequality may increase due to these entry barriers, incumbents face less competition and should find it easier to earn an above average rate of return.

### Intensity of competition

In addition to affecting a firm's competitive advantage through entry barriers, inequality may affect the degree of competition a firm faces. Take, for instance, a competitive environment with a homogenous customer base. Customers possess similar tastes and preferences for goods and services. In this environment, many firms are competing for a very similar customer base. Profits are reduced until some firms either (i) find ways to differentiate their products, (ii) form a competitive advantage, or ultimately (iii) exit the industry. Furthermore, assume that more homogeneity of customers is related to social equality. Inequality, then, is related to greater variations in customers' tastes for goods and services, i.e. heterogeneity. This reduces the competition in any given market, since, firms have to make choices on which customer base to serve. Should the firm attempt to capture surplus from group A or group B? This choice reduces competition because some firms choose customer base A, others choose customer base B, and still others may attempt to satisfy both groups. While the absence of entry barriers will increase competition in the long-run, diversity may lead to increases in profitable opportunities in the short term.

Our discussion implies that inequality may increase barriers to entry for new entrants and reduce the competition the incumbents face. Thus, we argue that inequality may improve the ability for a firm to survive in the marketplace. Therefore, we formulate our first hypothesis:

**H1:** There is a positive relationship between economic inequality and rates of firm survival.

However, economic inequality can be a vague measure. Some argue whether economic inequality really matters, and this debate is often centered on a discussion of the source of economic inequality and the role of political ideology. In a review of inequality, Jencks (2002) points out how liberals may find the growing disparity between the rich and middle class as evidence that America is headed in the wrong direction. However, conservatives may view this inequality differently, as they may feel that the returns to the rich are the best way to reward productive businesses. In a similar vein, if the income gap between the poor and the middle class widens, liberals view this as a problem of a lack of opportunity while conservatives may not view this as a problem at all according to the belief that the welfare state may encourage idleness among the poor. Putting the matter of politics aside, this discussion illustrates that inequality may affect the community in different ways, depending on its source.

One source of inequality arises from differences in opportunities related to education, employment and training, and barriers to entry (Porter & Porter, 1998). How might this source of inequality affect the income distribution? We argue that it is more likely to affect the bottom of the income distribution since poverty is associated with low levels of education (Cornell, 1994), more unemployment (U.S. Census Bureau, 2011; Nichols & Callan, 2011), and less training. For instance, the Job Training Partnership Act (now the Workforce Investment Act) provides classroom training in occupational skills, remedial education, job search assistance, and on the job training at private firms, where one requirement is that individuals must be economically disadvantaged (Heckman & Smith, 2003). Of course, the middle class may also suffer from lower levels of education, unemployment, and training, but the degree of suffering is likely much less than the poor. The wealthy are the least likely to suffer from these socioeconomic problems. Therefore, this low-level inequality arises as the poor lag behind the wealthy and middle class in terms of education, employment, and training.

Low-level inequality may affect the business community in many ways. First, when employees receive little training, they are unprepared for the workforce. Low-level inequality also arises from a lack of education. Less education also suggests that workers are less prepared for the work force. If poorer individuals have less education, training, and experience, then individuals in the middle class and elite are in a better position to succeed in their business venture since this results in less competition from these poorer individuals. In addition, these socioeconomic deficiencies all result in higher barriers to entry in the market. Therefore, we formulate our second hypothesis:

**H2:** The effect of inequality on firm survival will be largest when the source of inequality is due to inequities in the bottom of the income distribution.

## METHODOLOGY

### Sample and data description

The data used to identify the effect of economic inequality on firm survival are taken from two sources. The majority of data are taken from the Kauffman Firm Survey (Ballou et al. 2008). As previously mentioned, these data are gathered from the results of an annual survey. It tracks nascent, small businesses beginning in 2004 and ending in 2011 for a total of eight years of study.

These data provide a perfect opportunity to observe firm survival, since researchers can easily ascertain when respondents go out of business. Not only does it track when respondents go out of business, but it also tracks the reason *why* the firm closes its doors. This section will begin by describing the data coding process and how it assists researchers in addressing business survival questions.

In practice, data are coded such that researchers assign an id to each business and complete an annual survey to follow-up on the status of the enterprise. The key indicator for our study is whether the business is still operating or not. As we will describe later, businesses can be coded 0, 1, 2, 3, or 4. The codes are explained as follows: 0 identifies a respondent as still in operation, and the remainder classify a respondent as no longer in operation. Of these remaining categories, 1 says a respondent has sold the business; 2 equals a business merger; 3 is a temporary shutdown; 4 depicts the category of interest, firm exit. These indicators determine whether the business is still in operation, and how it has exited if it is no longer operating.

Coding business survival under these five categories allows researchers to conduct competing risk models. These models recognize that respondents may drop out of the study for many reasons. Failure may refer to a temporary shutdown, a merger or acquisition, a sale of the enterprise, and permanently going out of business. It is this fourth category that is our concern because it is the only true measure of business failure.

A temporary shutdown is most likely a profitable decision, since the marginal costs likely exceed marginal benefits for certain times of a day or seasons in a year. A merger or acquisition may imply that a business was failing and was sold to pay back investors and debtors. But, this is not necessarily true. Mergers, acquisitions, and sales may be the best option for an otherwise thriving venture. Small business owners may desire retirement and have no kin to inherit the business. Entrepreneurs will sometimes focus on building start-ups only to sell them once they become profitable. Therefore, this category is not a good indicator of true business failure. Therefore, we are left with one remaining category, exit (long-term). A competing risk model only considers failure when a business responds yes to this final category. The data are described in Table 1 below.

**Table 1 – Sample Statistics**

<b>Variable</b>	<b>N</b>	<b>Mean</b>	<b>Std. Dev.</b>
<i>Economic Inequality</i>			
Income 90/10	5,400	4.42	0.48
Income 75/10	5,400	2.99	0.28
Income 50/10	5,400	1.92	0.14
Income 25/10	5,400	1.29	0.06
Income 90/75	5,400	1.48	0.05
Income 90/50	5,400	2.29	0.14
<i>Firm Characteristics</i>			
Home based	17,854	0.54	0.50
Sole proprietorship	17,854	0.32	0.47
Comparative advantage	17,760	0.58	0.50
Have IP	17,818	0.21	0.41
Profit	16,621	0.62	0.49
Assets (log) (\$1,000)	16,675	609	1,340
<i>Owner Characteristics</i>			
Education	17,820	0.53	0.50
Work experience	17,835	13.04	10.23
Age	17,829	47.85	10.54
White	17,830	0.85	0.35
Gender	17,833	0.72	0.40
<i>County Characteristics</i>			
Gender diversity	17,833	0.08	0.18
Credit risk	15,286	3.03	0.92
Income per capita (\$1,000)	12,279	38.40	11.88
social capital	13,993	-0.41	0.94

The data consists primarily of small businesses. For example, 54% of all businesses list their home as their primary location and 32% of owners are registered as sole-proprietorships. The mean owner in the data sample has 13 years of experience and is 48 years old. In addition, 85% of owners are white and 72% are male. While 58% of firms claim they have a comparative advantage in one area, only 21% of firms have intellectual property claims.

The correlation matrix is presented in Table 2. Economic inequality is positively correlated with income per capita. Also of interest, economic inequality is correlated with social capital in competing directions, depending on the location of the inequality. For example, the ratio of the 90th to 75th income percentile is negatively correlated with social capital (-0.38) but the ratio of the 25th to 10th income percentile is positively correlated with social capital (0.30). This furthers our rationale that any study of the effects of inequality needs to be examined not merely from the overall degree of economic inequality but also from different locations in the income distribution.



**Table 2 – Correlation Matrix**

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	
social capital	[1]	1																			
Income per capita	[2]	0.27	1																		
Home	[3]	0.03	0.01	1																	
Sole Proprietor	[4]	-0.08	-0.10	0.21	1																
Comp advantage	[5]	-0.01	-0.00	-0.10	-0.06	1															
Have IP	[6]	-0.00	0.06	-0.08	-0.10	0.16	1														
Education	[7]	0.05	0.14	0.01	-0.10	0.08	0.13	1													
Work exp.	[8]	0.05	0.01	-0.02	-0.03	0.03	0.02	0.04	1												
Age of owner	[9]	-0.01	0.04	0.05	0.04	-0.04	0.02	0.09	0.38	1											
White	[10]	0.14	-0.01	0.01	-0.06	0.01	-0.02	-0.03	0.04	0.10	1										
Gender	[11]	0.02	0.03	-0.06	-0.08	-0.01	0.02	0.05	0.21	-0.02	0.04	1									
Gender diversity	[12]	-0.03	0.00	-0.02	-0.32	0.04	0.03	-0.09	-0.14	0.01	0.01	-0.22	1								
Credit risk	[13]	0.04	-0.08	0.09	0.15	-0.00	-0.04	-0.09	-0.05	-0.05	-0.04	-0.07	1								
Net_Profit	[14]	0.01	-0.01	-0.02	-0.01	-0.01	-0.02	0.01	0.01	-0.03	0.00	0.01	-0.01	-0.04	1						
Assets (log)	[15]	-0.01	0.03	-0.30	-0.24	0.14	0.09	0.03	0.05	0.02	0.09	0.10	0.10	0.18	0.06	1					
Income9010	[16]	-0.17	0.44	0.02	-0.04	0.00	0.03	0.11	0.01	0.02	-0.09	0.01	-0.00	-0.05	-0.01	0.02	1				
Income9075	[17]	-0.38	0.21	-0.01	-0.03	0.01	0.03	0.08	-0.02	0.00	-0.09	0.01	0.03	-0.08	-0.01	0.02	0.59	1			
Income9050	[18]	-0.42	0.24	-0.01	-0.00	0.00	0.02	0.08	-0.01	0.02	-0.12	0.02	0.02	-0.09	-0.01	0.02	0.81	0.85	1		
Income5010	[19]	0.11	0.47	0.05	-0.06	-0.00	0.02	0.10	0.02	0.02	-0.03	0.00	-0.02	0.00	-0.00	0.00	0.85	0.17	0.38	1	
Income2510	[20]	0.30	0.46	0.07	-0.13	0.03	0.03	0.11	0.03	0.01	0.03	0.02	-0.01	0.03	-0.00	0.02	0.62	0.11	0.14	0.84	1

## Survey design and multiple imputation

Typical survival analysis relies on the assumption that each subject has the same chance of being selected into the sample. However, as is the case with the Kaufmann Firm Survey data, the subjects were selected into the sample based on a complex survey design. A failure to account for survey design may lead to biased point estimates and underestimated standard errors. For these reasons, the empirical analysis takes into consideration the survey design<sup>2</sup>.

There are two methods to handle missing data. First, statistical packages will drop observations in the presence of missing data. This is commonly referred to listwise deletion or casewise deletion. The cost of this procedure is a reduced sample size and potential bias when the remaining observations are not representative of the population of interest. An alternative method of handling missing data is known as multiple imputation (MI). MI is a simulation-based procedure that involves three parts: (i) imputation, which replaces missing values with multiple sets of plausible values, (ii) completed-data analysis, which is performed on the dataset, and (iii) pooling which consolidates the results from the previous step into one MI inference using Rubin's combination rules (see, e.g., Rubin (1987)). Survey design corrections and MI methods are outlined in the Kaufmann Firm Survey design guide<sup>3</sup> and are used in the empirical analysis in this study.

## RESULTS AND ANALYSIS

### Examination of how inequality affects firm exit

The analysis begins with an examination of the relationship between economic inequality and firm exits in Table 3. There are six models examined in Table 3, and we discuss each one sequentially. The regressions in Table 3 employ a Cox-proportional hazard model in order to examine the survival rates of firms. Cox models are used primarily because of the right-censoring issues in the data; some firms have not failed by the end of the study.

<sup>2</sup> For more information, see Cochran (1977), Levy & Lemeshow (2013), Korn & Graubard (2011), and Cleves et al. (2008). The latter is a useful guide for researchers using Stata.

<sup>3</sup> This guide is privately held and unfortunately not available to the public because it contains detailed information on the firm respondents in the survey.

The findings in Model 1 suggest that economic inequality is associated with a sizable reduction in firm exits. In order to interpret the magnitude of the effect, it is important to convert coefficients into hazard rates, which is achieved by taking the exponential of the coefficient and differencing from one. For instance, the hazard rate in model 1 for the 90/10 decile ratio is 0.70 ( $p < 0.05$ ;  $t = 2.50$ ), which suggests that a one unit increase in the 90/10 decile ratio is associated with a 30% ( $1.00 - 0.70$ ) decrease in firm exits. Therefore, numbers below one indicate that a variable increases a firm's survival rate, and numbers exceeding one indicate that a variable decreases a firm's survival rate.

**Table 3 – How Economic Inequality Affects Firm Exits, 2004-2011**

Variables	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
<i>Firm characteristics</i>												
Home Based	0.91	(0.79)	0.91	(0.76)	0.91	(0.72)	0.91	(0.76)	0.90	(0.89)	0.89	(0.90)
Sole Proprietorship	0.88	(0.96)	0.89	(0.93)	0.88	(1.02)	0.87	(1.08)	0.88	(1.00)	0.89	(0.94)
Comp advantage	0.77**	(2.33)	0.77**	(2.36)	0.77**	(2.36)	0.77**	(2.28)	0.77**	(2.27)	0.77**	(2.29)
Have IP	0.88	(0.79)	0.88	(0.81)	0.88	(0.80)	0.88	(0.80)	0.88	(0.80)	0.88	(0.80)
Credit risk	1.42***	(5.02)	1.42***	(5.04)	1.42***	(5.04)	1.42***	(4.95)	1.40***	(4.83)	1.41***	(4.88)
Profit	0.75**	(2.50)	0.75**	(2.50)	0.75**	(2.53)	0.75**	(2.56)	0.75**	(2.49)	0.75**	(2.47)
Assets (log)	0.96**	(2.56)	0.96**	(2.52)	0.96**	(2.55)	0.96***	(2.59)	0.96	(2.62)	0.96***	(2.59)
<i>Owner characteristics</i>												
Education	0.88	(1.05)	0.88	(1.07)	0.88	(1.07)	0.88	(1.08)	0.88	(1.10)	0.88	(1.12)
Work experience	0.98***	(2.95)	0.98***	(2.95)	0.98***	(2.92)	0.98***	(2.91)	0.98***	(2.92)	0.98***	(2.96)
Age	1.00	(0.28)	1.00	(0.26)	1.00	(0.26)	1.00	(0.28)	1.00	(0.37)	1.00	(0.35)
Race White	1.06	(0.34)	1.06	(0.34)	1.07	(0.39)	1.10	(0.55)	1.10	(0.52)	1.08	(0.41)
Gender	1.10	(0.68)	1.10	(0.65)	1.09	(0.64)	1.11	(0.75)	1.11	(0.75)	1.11	(0.76)
<i>County characteristics</i>												
Gender diversity	0.92	(0.23)	0.93	(0.21)	0.93	(0.22)	0.93	(0.21)	0.94	(0.19)	0.93	(0.21)
Income per capita	1.00**	(2.00)	1.00*	(1.94)	1.00*	(1.95)	1.00	(1.58)	1.00	(1.14)	1.00	(1.46)
Social capital	0.82***	(2.76)	0.85**	(2.51)	0.87**	(2.16)	0.89	(1.79)*	0.85**	(2.26)	0.82***	(2.63)
<i>Income Inequality</i>												
Income9010	0.70**	(2.50)										
Income7510			0.54**	(2.56)								
Income5010					0.29**	(2.52)						
Income2510							0.12*	(1.72)				
Income9075									0.46	(0.64)		
Income9050											0.45	(1.51)
<i>Log-likelihood</i>												

Note – Dependent variable is firm duration. Cox-proportional hazard models are estimated in all specifications. Hazard ratios are reported which are the exponential regression coefficients ( $e^{\beta}$ ). Hazard ratios above 1 (below 1) indicate that the variable increases (decreases) the risk of firm exit. Coefficients can be interpreted by differencing from 1.  $|t|$  statistics in parentheses with standard errors adjusted for survey sampling. Two-digit NAICS industry fixed effects included in all specifications.  $N = 5,400$ . \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$  (two-tailed test)

### Further examination of the income distribution

There are many ways to think about inequality. The method we have used thus far is to look at inequality based on the ratio of the top and bottom income categories in our data. This measure is the ratio of the 90th and 10th income percentiles. An alternative is to provide a ratio of income percentiles throughout specific locations of the income distribution. This may be important because inequality may have dramatically different effects depending on its source. Inequality may affect the community and businesses in one direction if it is driven primarily by differences in income between the elite and middle class. However, if inequality is driven primarily by differences in income between the middle class and poor, it may have a different effect on businesses and the community. Looking at income inequality in more detail will help identify where in the income distribution inequality matters most.

Models 2 - 6 examine the relationship between economic inequality and firm exits using alternative income ratio specifications. Overall, we can interpret two findings from this analysis. First, the finding that small businesses have a lower chance of exiting due to firm failure is related to and facilitated by income inequality. This finding is robust to some of these alternative income

ratio specifications. Second, and more importantly, the type of inequality may be very important since the results appear to suggest that inequality only affects firm exits when it affects the bottom of the income distribution--the bottom 10 percentile. This is supported by statistically significant relationships between inequality and firm exits in Models 2, 3, and 4, though evidence is slightly weaker in Model 4 ( $t=1.72$ ) where the inequality measure uses the 25/10 income ratio. Nevertheless, all of these inequality measures that utilize the bottom 10 percentile of income appear to affect firm failures. In contrast, the inequality measures that focus on the upper end of the income distribution (e.g., the 90/75 and 90/50 income ratios) are not statistically related to firm failures.

Another point is worthy of discussion. At first glance, it appears that the magnitude of the effect becomes larger as the type of inequality emphasized shifts towards the bottom of the income distribution. However, this is incorrect as there are differences in the variance of each income ratio measure. In order to see this, we can normalize the marginal effects by interpreting a common, one standard deviation increase in each income ratio and by analyzing the effect of each measure on firm exits. For instance, a one standard deviation increase in the 90/10 income ratio is associated with a 14% decrease in firm exits, a 13% decrease in firm exits for the 75/10 income ratio, a 10% decrease in firm exits for the 50/10 income ratio, and a 5% decrease in firm exits for the 25/10 income ratio<sup>4</sup>. Overall, the magnitude of each measure's effect on firm exits does not appear to be statistically different from the others.

The model also seems to support *ex-ante* priors for most control variables. For example, firms with higher credit risks are at an increased risk of failure, and firms with more social capital, profitability, assets, and sources of competitive advantage are all at a lower risk of failure.

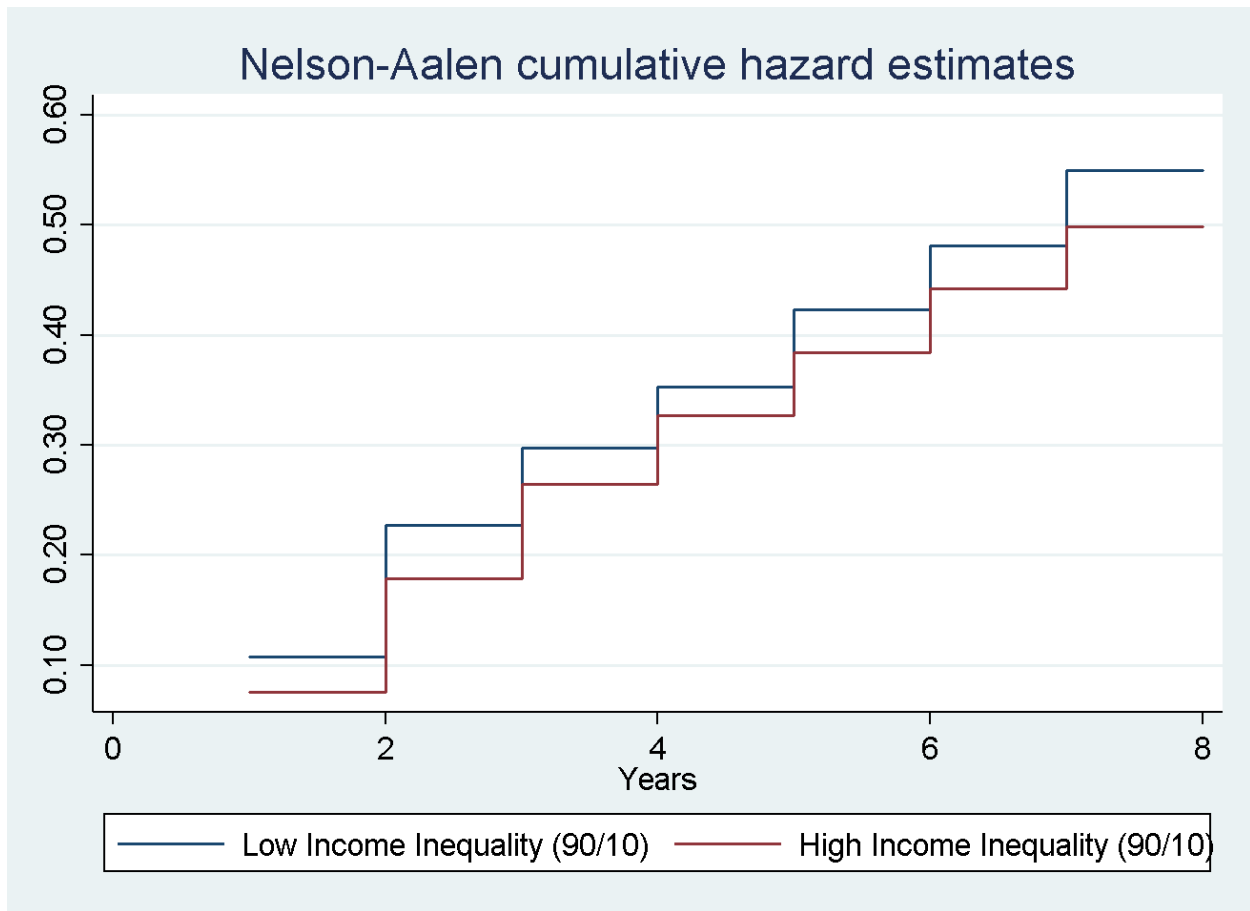
## DISCUSSION

The findings in this study suggests that economic inequality facilitates small business survival. Businesses located in MSAs with more inequality have better rates of survival due to a reduced risk of firm exit. A simple but powerful tool to describe this relationship is the Nelson-Aalen Cumulative Hazard graph.

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<sup>4</sup> To see this, multiply the coefficient by the standard deviation, which can be found in the summary statistics in Table 1. Hazard ratios are reported in Table 3, but the coefficients can be found by taking the natural logarithm of the hazard ratio because  $\ln(e\beta)=\beta$ . After computing the effect of each measure according to a one-standard deviation change in inequality, hazard ratios are re-reported.

**Figure 1 - Effect of Inequality on Cumulative Failure Rates**



The Nelson-Aalen Cumulative Hazard graph in Figure 1 illustrates how economic inequality affects small business survival. The assumption of Cox-Proportional hazard models; is that it assumes at some point in the future, all respondents will fail. This graph illustrates the effect of economic inequality on cumulative failure rates. Inequality is divided into two groups in Figure 1: (i) high economic inequality and (ii) low economic inequality. The high inequality group is comprised of firms located in MSAs that experience inequality in the 90/10 income ratio above the median, and the low inequality group is comprised of firms with inequality in the 90/10 income ratio below the median. As is illustrated, small businesses in the high inequality group experienced the lowest cumulative hazard rate. By the end of the study, the high inequality grouped experienced a roughly five percent lower rate of failure than the low inequality group. Here, the cumulative hazard rate is defined as  $\sum_i d_i/T_i$  where  $d_i$  refers to the number of deaths in period  $i$  and  $T_i$  refers to the total number of businesses in each period  $i$ .

The Kauffman firm survey data tracks firms from 2004 until 2011, and by the end of the study 65% of firms in the low inequality group were subject to failure. In contrast, only 60% of the firms in the high inequality group failed by the same time period. This difference in small business exit suggests that inequality may play an important role in fostering small business survival. The main problem with this analysis is that Kaplan-Meier fails to hold all other variation constant and

assumes the only differences between these firms is that they possess different levels of inequality. While this is most likely a false assumption, the results are consistent with the empirical analysis carried out in Table 3. Those empirical examinations did control for other variation, and this lends more credence to suggest that inequality does influence small business survival by reducing the rate of firm exit.

### Inequality does affect the business community

As the results from the analysis suggest, economic inequality is an important driver of firm failure. In communities with more inequality, the rate of firm survival increases. We believe this is driven by an increased opportunity for businesses to engage in new sectors and markets by targeting various segments of the population. For example, with more inequality, there may be increased demand for alternative forms of banking and lending. This may range from traditional brick and mortar banks to quick loan companies. With more segments of the population needing attention, this reduces the degree of competition in each community. Another reason inequality may increase firm survival is due to government policy by increasing barriers to entry (Porter & Porter, 1998). By increasing barriers to entry, incumbents face less competition from new entrants and have better survival rates.

### The type of inequality matters and should be emphasized more

The analysis also finds that inequality matters more for the business community at the bottom of the income distribution than at the top. Differences in inequality between the rich and very rich do not appear to affect firm exits, while disparities between the bottom and top of the income distribution are associated with increased rates of firm survival.

Many studies do not distinguish between types of economic inequality or emphasize specific portions of the income distribution. Partly, this is due to the prevalent usage of the Gini coefficient, which is a valid measure of inequality, but only describes how much inequality exists. It does not describe where the inequality is concentrated along the distribution. This is one advantage of our study, and more specifically, an advantage of using income ratios as measures of inequality. When inequality is described, the focus is usually placed on the disparities between the rich and poor, and this is supported by our finding. However, we only know this from analyzing separate income ratios and by finding stronger evidence when comparing the incomes of the bottom 10% to the rest of the income distribution.

Considering alternative forms of inequality yields another possible conclusion; the views presented by Piketty and Porter may not be in conflict with each other. For instance, government policy and institutional quality may affect the bottom end of the income distribution due to weak policies that stifle upwards mobility and entrepreneurial success. On the other hand, it is likely that the rate of return on capital and investments exceeding the return of the economy would affect income inequality at the top end of the income distribution more than the bottom.

Though, this is not the emphasis of our paper, it is important to remind readers that inequality is not necessarily a bad thing---especially if the disparity in economic inequality is rather small. Diversity stems from societal differences and, to some extent, economic inequality reflects these differences. For instance, Porter & Porter (1998) argue that the competitive process will naturally select candidates who perform better than others. If these individuals are rewarded in the market place, it may be due to the competitive process. Then, as long as inequality is related to increased innovation and productivity, it should not be disastrous for the community. Further, a community is not necessarily superior to another because it has more equality among its citizens; a completely equal and poor community is likely a worse environment than an unequal and wealthier community.

Of course, one problem with this reasoning may exist. What happens when inequality arises from a source of unequal opportunities? The United States is supposed to be the land of opportunity, yet income mobility, the probability that you can achieve the “American dream” and climb from rags to riches, is smaller in the U.S. than it is in Canada and most of Western Europe (Chetty et al. 2015). One potential extension of this paper may arise from this criticism. Interested researchers may want to test the effect of income mobility on firm survival or other aspects in the business community.

## CONCLUSION

Our study used the Kauffman firm survey to examine how economic inequality affected new businesses using data on newly founded small businesses in the United States between the years of 2004 and 2011, and our findings enabled us to draw important conclusions about the role economic inequality plays in the business community. First, inequality does appear to be an important driver of business failure and success.

We used the 90th to 10th income ratio as our primary measure of economic inequality and our findings suggested that a one standard deviation increase in inequality is associated with a 14% decrease in the rate of firm exits, holding all other factors constant. Stated differently, we found that firms find it easier to survive in communities with more economic inequality. However, we also found that the source of economic inequality was important.

Economic inequality between the middle class and poor was associated with an increase in firm survival, but we found no relationship between economic inequality and firm survival when using inequality measures based on the disparities between the elite and middle class. When inequality measures are employed that use the bottom 10 percent of income earners, a relationship with the survival rates of businesses appeared. However, we found no evidence of a statistically significant relationship between inequality and firm exits when the measure of inequality was the ratio of the 90th and 75th income percentiles or the ratio of the 90th and 50th income percentiles.

These results suggest that scholars should provide more attention to the type of inequality that is being studied. Many studies that analyze inequality focus primarily on a measure of overall inequality (e.g. the Gini index). While we do not wish to mitigate the importance of this approach, we also wish to illustrate how the source of inequality matters and may be underappreciated.

Furthermore, although we make no such suggestions, policy recommendations may be contingent on the source of inequality (i.e. on whether inequality arises due to disparities in the bottom or top of the income distribution). Future studies should be careful to examine not just whether inequality affects business, but also how it might affect business, as the channels through which inequality may provide a much richer picture of the inequality-business relationship.

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# Exchange Rate Volatility and Foreign Direct Investment

VAHDET KAYA, PH.D.<sup>1</sup>  
*Lamar University*  
*Beaumont, Texas, USA*

*After the collapse of Bretton Woods System, countries increasingly adopted flexible exchange rate systems and free capital flows. Flexible exchange rates permit countries to follow independent monetary policies, and free capital flows provide desired capital to support their growth. On the other side, flexible exchange rates and free capital flows are also causing dramatic changes in foreign exchange demand and supply. And it causes volatility in exchange rates which could be a source of uncertainty for foreign and domestic investors. Since uncertainty increases the risk for investors it can affect their decisions. In this paper, Effects of exchange rate volatility on foreign direct investment and domestic investment will be tested using cross section panel data analysis.*

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<sup>1</sup> Address correspondence to Vahdet Kaya, Ph.D., Adjunct Lecturer, Lamar University, Beaumont, Texas, USA.  
E-mail: [vkaya@lamar.edu](mailto:vkaya@lamar.edu)

# The Welfare Implications of Monopolistic Competition: Theoretical Analysis and Trade Application

MANITRA A. RAKOTOARISOA<sup>1</sup>

*United Nations Food and Agriculture Organization,  
Rome, Italy*

*Efficiency and welfare implications of monopolistic competition model remain inconclusive. This paper revisits the welfare estimation theories and applications and focuses on how fixed and demand-increasing costs affect the 'excess capacity' characterization of firms under monopolistic competition. A model with consumer preference for variety and an industry with differentiated products is developed and applied to data on US imports of semi-processed commodities. The model and estimation results reject the excess capacity characterization: fixed and demand-increasing costs play a key role in keeping incumbent and new entrant firms in business, thus increasing the industry's output and its contribution to welfare.*

**KEYWORDS** *Monopolistic competition; Product differentiation; Demand-increasing costs*

**JEL** *L11, D43*

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<sup>1</sup> Address correspondence to Manitra A. Rakotoarisoa, Trade and Markets Division, Economic and Social Development Department, United Nations Food and Agriculture Organization, D-835 Viale delle Terme di Caracalla 00153, Rome, Italy. E-mail: [Manitra.rakotoarisoa@fao.org](mailto:Manitra.rakotoarisoa@fao.org)

# The Mediating Role of Self-Efficacy in the Personality-Performance Relationship

ANAND RAJ<sup>1</sup>

*University of Texas at El Paso  
El Paso, Texas, USA*

PRAJYA R. VIDYARTHI

*University of Texas at El Paso  
El Paso, Texas, USA*

HOMERO AGUIRRE-MILLING

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*Research studies in industrial-organization psychology have established that personality factors predict job performance. However, research in this stream lack underlying theoretical rationale as the mechanism or the process behind the personality-performance relation is not fully established. There is a need to identify mediators to understand the underlying mechanism of the personality-performance relationship. The purpose of this paper is to develop a model in which individual's self-efficacy mediates the relationship between individual level personality factors and work performance. The second objective is to propose competing models incorporating both self-efficacy and work-orientation as mediating variables in the personality-performance relationship.*

**KEYWORDS**    *Self-efficacy, personality-performance relationship, job performance*

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<sup>1</sup> Address correspondence to Anand Raj, University of Texas at El Paso, 4228 Tarek Lane, El Paso, Texas 79912, USA. E-mail: [araj@miners.utep.edu](mailto:araj@miners.utep.edu)

# **Global Competences Helping Mexican's Managers to Improve Exportations**

HECTOR PERFECTO MOLINA REYNA, MBA<sup>1</sup>  
*Universidad Autónoma de Nuevo León  
San Nicolás de los Garza, Nuevo León, México*

MONICA BLANCO-JIMÉNEZ  
*Universidad Autónoma de Nuevo León  
San Nicolás de los Garza, Nuevo León, México*

ARTURO MARTÍNEZ LERMA  
*Universidad Autónoma de Nuevo León  
San Nicolás de los Garza, Nuevo León, México*

*Competences are defined by several scientists as having Knowledge, Skills, Attitudes and Experience in the field that competes and if these competences become global to Small and Medium Enterprises (SME) managers, then it becomes a challenge to face a competitive world's environment. There are certain theory definitions about global competences such as having skills in global processes (Second language), tolerance to work with its similar from other customs, among other. Currently, companies require managers with global competences to face the challenge that implies to have an international business. Therefore, this project's question is SME's general managers from Nuevo Leon get global competences, propelling like this exportations of these companies? In order to measure the global competences/variables a survey was prepared and applied to SME's general managers that have been supported by the World Trade Center from the Universidad Autonoma de Nuevo León and results shown in general they've been acquired not so high levels of global competences.*

**KEYWORDS**    *Global competence, SME, Exportation*

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<sup>1</sup> Address correspondence to Hector Perfecto Molina Reyna MBA, Professor and Ph.D student at the Facultad de Contaduría Pública y Administración of the Universidad Autónoma de Nuevo León. Av. Universidad S/N, Ciudad Universitaria, San Nicolás de los Garza, Nuevo León, México. E-mail [hector.molinary@uanl.edu.mx](mailto:hector.molinary@uanl.edu.mx)

## INTRODUCTION

The purpose of this paper is to determine the global competences that have general managers and this allow them to have a global vision in order to propel and encourage the exportation on SMEs from Monterrey surrounding areas. Therefore, this section is about the state of art of global competences and the benefits that could provide to SME's general managers to propel exportations. Subsequently, on the research problem statement, it includes a preliminary review of literature with the convergence of authors studied, continuing with central research question and research general hypothesis.

Several authors point out that global competences help to enrich ideas production and progress; raise institutional and managerial competences; that allow distinguish the organization's eventualities; incorporated to its functions in local commerce and simplify business goods optimization (Czinkota, 1996), (Blanco Jiménez , Romo, & Cruz Álvarez, 2013; Blanco Jiménez , Romo, & Cruz Álvarez, 2013). Due to the above, it consider global competences that may have managers in companies may propel them to become internationalized through exportation and provide them an opportunity to expand the goods and services market, as well as to improve their performance (Aulakh P. S., 1997), (Campa J. M., 1999). The exportation process sometimes is not easy particularly to SMEs, because as it is pointed out by focused research on exportation it allows to lead three main areas: antecedents to export (Hitt M. A., 2006), export performance (Sousa C. M. P., 2008) and export channel selection (Brouthers & H. J., 2007).

## PROBLEM STATEMENT

One of the main obstacles that regularly faced Mexican SMEs, as well as the entire Latin-American, are as follows (Puyana, 2002): Absence of training on exportation topic and management study, that only could reach through a continuous education in business management, due to the above, managers' global competences allow to propel export activity. By the other hand, Morrow et al. (2007) argue about difficulties that suffer one company to face its performance decrease, they encourage to the owners to think about decisive and brave actions with the purpose of overtake their possibilities of commercialization, this is the reason to be more qualified.

Based on this, the philosophers of this perspective (Kahneman & Tversky, 1979), (Tversky & Kahneman, 1981) mentioned that decisive factors that operate with losses are inclined at risk, while decisive factors that operate with profits tend to preserve them and being, by consequence, unfavorable at risk. It implies to the companies' owners with low performance to be more educated to take bigger risks versus the companies' owners with high performance, Therefore, taking risks help on adapt to change and to get a global vision that will allow them to face those risks.

On other study, Carpenter y Fredrickson (2001) confirm that demography particularities on the owners has a relation with the level where the company preserves a relevant global position —To Carpenter y Fredrickson (2001), a relevant global position define the level in which the company needs customers' foreign trade, production elements and geographic dissemination of them, because of this, it is important that SME's owners or managers have global competences. Thus, companies have bigger opportunity if being internationals when they have heterogeneous owners,

taking the heterogeneity as an extension of their global experience, their education and time in charge of the company. If they measure them in function of global competences is to have: Worldwide knowledge, International social skills, Global attitudes and International experiences needed by general managers to propel the exportations in their companies.

Other research pointed out that the owners don't have these global competences and they have to go with contribution from external specialists mainly on the first steps of exportation. In some cases, the owners are conscious of their ignorance and lack of experience to face current problematic and, as a result, they perceived incompatible to start and lead essential modifications to achieve it, so the use of external consultants is, in greater proportion, taken advantage by SMEs (Cater & Schwab, 2008).

Finally, they found important data in a study elaborated by the company Whole Service for Business, S.A. de C.V. (WSFB) in February of this year where calculates that approximately there are 4 million of SME's from industrial, trade and services in Mexico, from these was founded that the 83% does not make any activity to consolidate their presence abroad (PROMEXICO, 2013). As mentioned previously allow such opportunity window to promote the exportations growth in SMEs, and it will allow propel the employment and support the local social.

In this way, one of the reasons to address the problem statement on the specific case of the SMEs located in Monterrey surrounding area was to measure the global competences that have to get the general manager in these companies that allow to propel the exportations and improvements in social areas such as: to raise their production and by consequence to trigger job opportunities to the community. For this reason it set the research question, objective and hypothesis up as follows: ¿Have Mexican managers the global competences to improve the exportations of small and medium enterprises?. So the objective is to determine the global competences of Mexican managers that improve exportations of small and medium enterprises in Nuevo León, Mexico and our Hypothesis are that this global competences are: Worldwide knowledge, International social skills, Global attitudes and International experiences.

## LITERATURE REVIEW

The global competence has become a fashion in the executives recruiting industry and global competences certifications, just like being globally competent has become a central piece of several initiatives on resumes in colleges, including those in the Boston College and Pittsburgh University. (Cendant Mobility, 2002).

On this research paper is taking in count the definition and dimensions about global competences pointed by William Brustein (2003), University Center Principal on Foreign studies of Pittsburgh University. It defines global competence as: "the skill to communicate effectively through linguistic and cultural borders and focus on issues transcending continents and cultures" and pointed to have following dimensions:

- The skill to work effectively on different international scenarios

- A consciousness of the main flows of the global change and issues that emerge from such changes
- Knowledge of global organizations and business activities
- The capacity for an effective communication, through linguistic and cultural borders
- A personal adaptability to diverse cultures (Brustein, 2003)

In same way, the company in international management Swiss Consulting Group, in their Global Competency Report 2002, identified the following essential global skills: To have: intercultural ability, effective communication in two ways, a diverse leadership and to share systematically the best practices and a real process design of global strategy. The Swiss Consulting Group also visualized the global competence as a business tactic, creating an opportunity for globally competent managers to “fall in parachute in any country and perform properly a job and respecting at same time the cultural paths” (Swiss Consulting Group, 2014).

Other definition according to Lee Olson & Kroeger (2001) from a global competent person is who has enough sustantive knowledge, perceptive comprehension and intercultural communication skills to interact efectively with our world globally interdependent. Due this, it is said that those days were employees were geographically limited are away.

Actually, is raised the number of employees looking for the ideal candidate, driven through a global search, no matte distance, in some cases, the language (Hunter W. D., 2005). Therefore, to have worldwide knowledges is one of the strategic variables from companies managers, because it requires regulatory knowledge from other countries (Pantin, 2006), just like review if foreign trade regulations apply in international trades on exportation process (Meon & Sekkat, 2008).

As well as it requires cultural sensibility that it acquires with cultural competences that are more significant (Wahley, 2008). In same way, to have adaptability and flexibility skill (Eyre & Smallman, 1998), (Evans, Gorretty, & Ambrose, 2013), (Jaramillo Naranjo, 2005) are one of the keys to the entrepreneurs can have success in their business.

## METHODOLOGY

This type of research is exploratory, descriptive and explicative because it looks explore and describe the global competences that has the general managers in SMEs from Monterrey surrounding areas that have been supported by the World Trade Center Nuevo León-UANL and analyze if exist correlation among independent variables: Worldwide knowledge, International social skills, Global attitudes and International experiences with the dependent variable the exportations increasing. The results will allow to explain why and under which conditions global competences are given.

In reference to research design is not experimental where the phenomenon has analyzed without variables manipulation. About the research techniques, it uses documental, bibliographic and field research.



In the field technique was designed a survey with items (questions) based in three main instruments developed by other authors and have been used to measure the characteristics and competences that help directors to attain the global competence. These are:

- 1) The Global Competence Checklist, created by William Hunter (2004). This researcher established in his thesis work an instrument and was sent to 133 international experts, such as educators and human resources director in transnational enterprises, to identify the knowledges, skills, attitudes and experiences needed to reach and being competent at worldwide level.
- 2) The Global Mindset Inventory (GMI) from the Thunderbird School of Global Management university and developed by Najafi Mentality Global Institute to support and determine the capacity of a global leader through three aspects:
  - a. The *Intellectual Capital*, that manifests the comprehension of a global business, the cosmopolite look and cognitive complexity of the person
  - b. The *Psychological Capital*, that reflect the passion for diversity, the search of adventure and security in itself, and
  - c. The *Social Capital*, refers to the intercultural empathy, the interpersonal impact and diplomacy used in the international trade.
- 3) The instrument of the Professional Certification in International Business and North American Small Business International Trade Educators (NASBITE), that offers a reference point to the competences needed in the worldwide trade. It measures the capacity to make global business through four dimensions: Global Business Management, Global Marketing, Supply Chain Management, and Finance and Commerce.

The final survey that integrated these three surveys counted a grand total of 24 questions: in the first section asked for general information of the survey respondent profile and the company, and in the second formed a group of 4 questions for each of the 4 variables or global competences. It used a Likert scale of five points from 1 to 5, where 1 (It has not), 2 (It has a little), 3 (It has something), 4 (It has enough) or 5 (It has a lot).

To measure if the instrument or survey is reliable it used the Alfa of Cronbach to the four groups of competences: Worldwide knowledge, International social skills, Global attitudes and International experiences. The results of the Alfa see Table 1 shown appropriate levels, therefore, it considers that all variables are reliable in its measuring because the constructs by the individual competences in the survey shown levels between 0.07 and 0.09, levels accepted according to the Alpha' standards.

**Table 1.** Instrument reliability

	Alfa of Cronbach	Criteria (George & Mallery, 2003)
Variable 1: Worldwide knowledge	0.831	$\alpha \geq 0.8$ Good
Variable 2: International social skills	0.864	$\alpha \geq 0.8$ Good
Variable 3: Global attitudes	0.786	$\alpha \geq 0.8$ Good
Variable 4: International experiences	0.756	$\alpha \geq 0.7$ Acceptable

Source: Own elaboration

Regarding study of subject, it decided to make a survey to the general managers that work on the SMEs that have been supported by the *World Trade Center* Nuevo León-UANL (WTCNL) giving support and assessment to propel their exportations. It should be pointed out that the WTCNL is an organism that is located in the Universidad Autonoma de Nuevo León and one of their objectives is to support the SMEs to be competitive from the beginning of their activities until the internationalization of their products offering assessment and training with quality and to create an economic impact (<http://wtcnl.uanl.mx/>, 2015)

It started from the principle that the survey should be applied to SMEs that are initiating their exportations to meet how many global competences have their general managers and how these competences have been supported their internationalization process. The WTCNL supports SMEs to such process and was requested to support with the direct application of the suerveys. As a preliminary approach it could obtain a grand total of 16 survey from companies supported by this center. In this representative sample selected was used for the pilot test of the survey and preliminary results are shown as follows.

## RESULTS

The profile results of the manager and companies from survey respondent is as follows: They were 62.5% men and 37.5% women; the 81.25% have more than 36 years old, the 25% have less than one year and a 50% more than 5 years working in the current company; all are owners, or general managers. Regarding the type of the company or organization, a good portion are companies of services (finances, construction, transport, service to international commerce, technology and health services), almost the 70 % work on SMEs (less than 100 employees).

About the statistical results of global competences are shown through general analysis of global competences of all managers. Therefore, was developed the following statistical procedures to validate with descriptive statistic and variance analysis of the research hypothesis and the null one.

To test the null hypothesis: “there is a lack of global competences (*Worldwide knowledge, International social skills, Global attitudes and International experiences*) required to propel exportation by SMEs’ general managers supported by the *World Trade Center-Universidad Autonoma de Nuevo Leon*” will be approved is results of the population mean are less than 3 in Likert scale (3=Average).

$$H_1: \geq 3 \quad e, \quad H_0: < 3$$

**Table 2.** Research hypothesis test about global competences

Key variable / Likert scale	Mean	C.I. lower at 95%	C.I. upper at 95%	
<i>Worldwide knowledge</i> measurement	3,13	2,7	3,6	Accepted
<i>International social skills</i> measurement	3,44	2,9	3,9	Accepted
<i>Global attitudes</i> measurement	3,94	3,6	4,3	Accepted
<i>International experiences</i> measurement	3.25	2,8	3,8	Accepted

Note: Own elaboration

Analyzing statistical results from Table 2, the four elements from our null hypothesis shown that the relation of global competences (*Worldwide knowledge*, *International social skills*, *Global attitudes* and *International experiences*) are greater than 3. Therefore, the research hypothesis is accepted on such global competences; because data is bigger than 3 on Likert scale (3=It has something).

By the other hand, the Confidence Interval at 95% from Table 2, to the four constructs: *Worldwide knowledge*, *International social skills*, *Global attitudes* and *International experiences* fluctuates between number 3 (It has something) and 4 (It has enough) because the SMEs general managers' global competences are one reason to raise their business opportunities abroad.

Regarding the global competence of *Worldwide knowledge*, not all the SMEs general managers were located on "It has something" level of *Worldwide knowledge*, where are located the statements of *History and geography worldwide knowledge* (3,63) and *Global economic and politic issue knowledge* (3,63) with an upper average and the *Other supply options in other parts of the world knowledge* with the lower (2,69).

Regarding the global competence of *International social skills*, the majority shown same levels of "It has something", where the *Collaborate and interact with people of other cultures skill* has the highest average (4,06), in contrast with *To have networks with business people from other cultures and influential people* with the lowest (2,56).

While the global competence of *Global attitudes*, shown the highest average, closer to the category "It has enough" with the statements of higher average: *Reacts without prejudices to cultural differences* and *Recognize that their world's point of view is not universal* with a 4,19 and with a lower average *Want to live in other part of the world (Enjoy to live in other country)* with 3,31.

Finally, the global competence of *International experiences*, shown the average within the category "It has something" with the statement of highest average: *It has gained experience with short term trips abroad* with a 4,20 and the lowest: *Use another language more than 25% of the work time* with a 2,13

## CONCLUSIONS

As shown on results, it has statistically accepted the hypothesis but with average levels to three, therefore it is assumed that the general managers have something of the global competences on Worldwide knowledge, *International social skills*, *Global attitudes* and *International experiences* that have been acquired and that have been allowed to face competitively to the global market as increasing the exportations.

This is unexpected, most of all because the general managers are found in a multicultural environment developed and in an important area of bilateral trade with the Mexican border. As mentioned in the Literature Review, the general managers should have broadest knowledge of their surrounding world, this because now have to work not just locally but compete to worldwide level. This is an important reason for public institutions to keep preparing SMEs general managers to become interculturally competent in a global market.

The global economy is moving towards the commerce protectionist barriers elimination; however, it seems that cultural barriers still remain, but they must be eliminated. The relevance is to talk other languages, to meet other cultures and the comprehension of the cultural differences abroad, they are aspects that are recognized by transnational companies, so like successful franchises of small business and, overall, by multinational entrepreneurs.

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# **Impact of International Accreditation in the Recognition of Academic Degrees in the Domestic and Foreign Labor Market. Case Study: Civil Engineering Program**

JOSÉ BARRAGÁN CODINA<sup>1</sup>

*Universidad Autónoma de Nuevo León – Facultad de Contaduría Pública y Administración y Facultad de Ingeniería Civil, San Nicolás de los Garza, Nuevo León, México*

DANIEL BORTONI HERRERA

*Universidad Autónoma de Nuevo León – Facultad de Contaduría Pública y Administración y Facultad de Ingeniería Civil, San Nicolás de los Garza, Nuevo León, México*

*In a globalized era it is not enough to have a professional qualification to ensure economic and professional success. The academic background of professionals must be adequate to face challenges and solve problems of a globalized and dynamic world.*

*Civil engineers face many complications when seeking an international career. There are many differences within the profession worldwide, such as: resources, workforce, climate, language, culture, philosophies, regulations, etc. which raise the entry barriers to fully practice as a civil engineer. The International accreditations play a major role as the first evidence of the civil engineer technical proficiency. These assure the quality of the higher education curricula and add value to the human capital on an international context.*

*Despite the fact that many Mexican Universities have academic programs which have international accreditations, civil engineer graduates cannot easily work across borders. This paper describes the impact that international accreditation has on civil engineers when seeking an international career.*

**KEYWORDS**    *Accreditation, higher education, self-study, universities*

## **Impacto que tiene la acreditación internacional en el reconocimiento de grados académicos en el mercado laboral nacional y extranjero. Caso de estudio: programa de ingeniero civil**

*En la educación global, no es suficiente el tener una calificación profesional para asegurar el éxito económico y profesional. La formación académica de los profesionales debe ser adecuada para enfrentar los retos y resolver los problemas de un mundo globalizado y dinámico.*

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<sup>1</sup> Address correspondence to José Barragán Codina, Universidad Autónoma de Nuevo León – Facultad de Contaduría Pública y Administración y Facultad de Ingeniería Civil, San Nicolás de los Garza, Nuevo León, México. E-mail: [jose.barraganc@uanl.mx](mailto:jose.barraganc@uanl.mx)

*Los ingenieros civiles se enfrentan a muchas complicaciones en la búsqueda de una carrera profesional en el plano internacional. Hay muchas diferencias dentro de la profesión a nivel mundial, tales como: recursos, mano de obra, clima, idioma, cultura, filosofías, reglamentos, etc., que elevan las barreras de entrada para ejercer plenamente como ingeniero civil. Las acreditaciones internacionales desempeñan un papel importante como la primera evidencia de la capacidad técnica del ingeniero civil. Estos aseguran la calidad de los planes de estudios de enseñanza superior y agregan valor al capital humano en un contexto internacional.*

*A pesar de que muchas universidades mexicanas tienen programas académicos que cuentan con acreditaciones internacionales, los graduados de ingeniería civil no pueden trabajar fácilmente a través de las fronteras. En este trabajo se describe el impacto que la acreditación internacional tiene para los ingenieros civiles en la búsqueda de una carrera internacional.*

*PALABRAS CLAVE      Acreditación, educación superior, auto estudio, universidades*

## INTRODUCTION

Civil Engineers, as professionals, have a great impact on the welfare of societies. They are involved in the development and maintenance of essential projects including transportation systems, water distribution systems, and buildings for diverse purposes, to name just a few. As boundaries between nations are being lowered to enter a globalized and dynamic world new challenges appear. Civil engineers must keep pace with global opportunities and assume an active role. However, this task has been a very complicated subject.

“Professional recognition of civil engineering qualifications is generally straightforward at a national level, however across a border it can become a serious problem and, indeed, civil engineering is not a regulated profession in some countries. Hence mobility continues to be a very difficult issue, despite international accreditation agreements and accords”. (Sanjuan, 2010)

As stated by (Soeiro, 2006), “the active engineer wants to have the chance to look for other job opportunities in other countries. The engineer needs some form of recognition of his qualifications obtained through formal education and as a result of the professional experience obtained on the job”.

Mutual recognition of degrees between countries is necessary for civil engineers in order to maximize their potential and thus benefit communities. Higher education systems must improve their curricula to prepare future engineers with the necessary skills and competences to succeed globally. As described by (Chan & Fishbein, 2009), some key attributes of the global engineer are:

- communication skills and understanding of different cultures and languages;
- a facility for multidisciplinary and interdisciplinary teamwork;
- a well-developed sense of social responsibility and ethics, with due consideration in his/her personal and professional activities;
- being entrepreneurial; and
- an ability to deal with complexity and systems thinking.



Future engineers will help provide both ethical and sustainable solutions to tackle the global challenges and create the infrastructure needed by a globalized society.

This study aims to see the current outlook of civil engineers. Civil engineering programs throughout Mexico are accredited by national and international bodies. What is the impact of accreditations when seeking an international career? Are the civil engineer graduates prepared with the competences needed on a global context?

## THEORETICAL FRAMEWORK

On his research (Fishbein, 2009) states that “global engineers should understand and propose solutions for many of the complex emerging global issues”. (Lenn, 2000) emphasizes that “the global marketplace has accentuated the need for cross-border movement of professionals, thus providing additional pretense for international trade”. (Codina, 2010) accentuates about “the importance of specialized graduates, capable of visualize risks and opportunities in the international plane. About how graduates must possess research and customer-focused abilities as well as international experience within the professional degree”.

The need for global engineers is not a new subject. Universities must adopt an active position and improve their curricula in order to prepare engineers with the competences needed for any upcoming challenges. On his research, (Riemer, 2007) describes the importance of the communication skills of the “new engineer” and states, “Engineering graduates require an ever-increasing range of skills to maintain relevance with the global environment of the new millennium”. Not only technical skills are needed, as stated by (Bourn & Ian, 2008) “Higher education needs to prepare engineers of the future with the skills and know-how they will need to manage rapid change, uncertainty and complexity. Key here is the ability to tailor engineering solutions to the local social, economic, political, cultural and environmental context and to understand the impact of local action on the wider world”. The accreditation bodies play a major role as the main assurance of quality of higher education programs. The term “accreditation” can be described as follows:

According to the Accreditation Board for Engineering and Technology (ABET, 2015), accreditation is a review process to determine if educational programs meet defined standards of quality.

According to the Accreditation Council for Engineering Education or in Spanish: Consejo de Acreditación de la Enseñanza de Ingeniería (CACEI, 2015), accreditation of a higher education program is the public acknowledgment granted by an accrediting body which ensures the program complies with a determined set of quality criteria and parameters”. (Jones, 2003) defines accreditation applied to engineering as a certification that an educational program meets a certain set of standards agreed upon by an authorizing entity.

(Espinoza & González, 2013) stated, “Institutional and program accreditation represents the seal of quality by a public entity and/or private institution, where in the latter case it has a

long term vision which consists of a commitment to excellence and guarantees regarding key aspects such as the coherence of the curriculum, teacher quality and the trajectory of alumni”.

From these assertions the question that arises is: What is the impact of accredited programs of Mexican universities when graduates pursue an international career?

#### CIVIL ENGINEERING PROFESSION IN MEXICO AND THE UNITED STATES.

Civil engineers are involved directly in the development of societies. With the rise of global needs, many engineering projects are executed remotely, even across countries. Capable professionals are needed to face emerging challenges and complexities. Engineers must be prepared with the necessary competencies and skills to perform projects successfully and deliver functional, and economical solutions.

#### EDUCATIONAL OUTLOOK

In Mexico and the U.S.A. the length of studies of the civil engineer program ranges from 8 to 10 semesters. Bachelor`s degree programs include coursework in physics, statistics, engineering mechanics, calculus, structural analysis, among other courses.

As shown in table 1 there are 110 civil engineer bachelor programs offered in Mexico which are affiliated to the ANUIES. Among these programs 50 are accredited by the (CACEI, 2015) and only 4 are accredited by the Accreditation Board for Engineering and Technology (ABET, 2015) and are offered by the following institutions:

- Universidad Autónoma de Nuevo León (UANL)
- Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM)
- Universidad Autónoma de San Luis Potosí (UASLP)
- Universidad Autónoma de Aguascalientes (UAAGS)

**Table 1:** Mexico, Civil Engineer Statistics 2013-2014  
(Absolut numbers)

<b>Element</b>	<b>Bachelor Degree</b>
<b>Institutions</b>	90
<b>Programs</b>	110
<b>Enrollment</b>	57,478
<b>Applications</b>	23,436
<b>Places offered</b>	13,202
<b>Total Graduate</b>	5,746

*Source:* ANUIES, Own elaboration with data from 911.9A 2013-2014 questionnaires.

## LICENSES, CERTIFICATIONS AND REGISTRATIONS

After the successful completion of the engineering program, graduates must pass a final exam or thesis to get a federal professional engineering license and the B.S. degree. This license not only allow Mexican engineers to practice their profession nationwide by being able to sign engineering documents, but also protects the public by preventing unqualified people from offering engineering services.

In the USA the process is different. Licensure is regulated at a state level; which means for an engineer to practice in multiple states, he or she must become licensed in each state.

Although the process is similar in all states, each has its own procedures. However, as described by the National Council of Examiners for Engineering and Surveying (NCEES, 2015), which is the organization that develops, administers and scores the examination used for engineering licensure, there is a general four step process for licensure candidates:

- Earn a degree from an ABET-accredited program.
- Pass the Fundamentals of Engineering (FE) Examination.
- Gain acceptable work experience (typically a minimum of 4 years).
- Pass the Practice of Engineering (PE) examination.

Once all the registration requirements are met the title of Professional Engineer P.E. is granted. Although it is not mandatory to be licensed to work as a civil engineer, it is necessary to sign and seal engineering documents and to become a consulting engineer. As stated by (Adams, 2008)“Being presented with the title professional is an honor that should not be treated lightly, as any career in a field by which service is offered to society brings great reward”.

## EMPLOYMENT AND PAYMENT

According to the National Survey of Occupation and Employment, the average monthly income in Mexico, was \$12,738 Mexican Pesos for the 1<sup>st</sup> quarter of 2015. While in the USA, according to the Bureau of Labor Statistics, the average monthly income was 7,260 US Dollars in May 2014.

## INTERNATIONAL ACCREDITATIONS. CONCEPTUAL DEFINITIONS AND PROCESS

It is important to establish what an accreditation is. Accreditation can be defined as:

“A recognition given by external evaluators stating that an institution and/or specific career is doing everything to prepare the alumni with the necessary competences and skills required by the labor market.”

“A university accreditation is a process to achieve a quality certification of the internal process within universities.”

In simple terms, accreditation is an internal and external revision made to an institution to determine if the curricula have the necessary level to be certified by the evaluation bodies in order to ensure the professional graduates are in a competitive level nationally and internationally. Accreditations have multiple benefits for institutions and societies. The institution gets the advantage of the reputation added to its image. An accredited institution provides the public a guarantee of the quality of education, so that not only demand would increase but recognition as well. Societies with accredited schools have the capacity to generate prepared human capital to face the challenges of a globalized world. Which would generate better life conditions, welfare and an increasing development through foreign direct investment.

With an increasingly competitive labor market, educational institutions need to be evaluated to meet international standards. However, since the needs, resources and interests vary greatly among countries, it is extremely difficult to standardize curricula and educational competences. There are now national and international evaluator bodies whose function is to establish and ensure quality standards for educational programs.

In Mexico, the Council for Higher Education Accreditation or in Spanish Consejo Para la Acreditación de la Educación Superior (COPAES, 2015), is the only recognized body by the federal government through the Public Education Secretariat or the Secretaría de Educación Pública (SEP) that confers formal recognition to organizations whose purpose is to accredit academic programs of public and private Higher Education Institutions in Mexico.

The COPAES recognize a variety of accreditation bodies sectors such as the Accreditation Council for Engineering Education or in Spanish : Consejo de Acreditación de la Enseñanza de la Ingeniería, A.C. (CACEI), the Accreditation Council for Arts in Higher education, or in Spanish: Consejo para la Acreditación de la Educación Superior de las Artes A.C. (CAESA), the Council for Accreditation for Humanities Higher Education, or in Spanish, : Consejo para la Acreditación de Programas Educativos en Humanidades, among many others.

#### BENEFITS OF INTERNATIONAL ACCREDITATION

Among the many benefits of international Accreditation the following can be listed according to the Peru's National Presidents Assembly, or Asamblea Nacional de Rectores de Perú ([www.sunedu.gob.pe/](http://www.sunedu.gob.pe/)):

- For students:
  - Ensure the quality of offered educational programs.
  - Achieve credit transfer and facilitate the acceptance to higher levels of educational programs.
  - It is a way to acknowledge the educational quality of a program and the institution.
- For universities:
  - Promotes continuous improvement.
  - Ensures an external evaluation of an international level that meets the expectations of society.
  - Allows updating study plans and curricula.

- Reduces public control and is governed by global educational trends.

#### GOVERNMENT POSITION REGARDING INTERNATIONAL ACCREDITATION

For the COPAES, in Mexico, the government assumes a regulatory role of the external and international assessments. The organization is dedicated to establish regulatory frameworks as follows:

- Submittal of proposal of guidelines and criteria to recognize the legality of national accreditation bodies.
- Statement of a common framework of criteria for the accreditation of educational programs.
- Evaluation of the national accreditation bodies.
- Publication of the national accrediting agencies recognized by them in directories

In the figure below is presented the different criteria used by international accrediting agencies. In this case three were selected:

	<b>ABET U.S.A</b>	<b>SACS</b>	<b>Canadian Universities</b>	<b>Quality for Latin America</b>
<b>Criteria</b>	Institutional Commitment	Mission, objectives and goals. Institutional integrity.	Reputation	Objectives of the Institution
	Administration	Planning and resources allocation. Directive Council or Administration Board.		Organization and Administration
	Facilities and infrastructure	Library and educational resource center. Plant and equipment.	Library	Library, physical plant.
	Curricular content and objective	Design and curricular program.		Educational program
		Results and Institutional effectiveness.		
	Academic Personnel	Teaching and academic staff.	Academic Personnel	Teaching Staff.
	Students	Student services.	Students	
		Budgeting and Accounting.	Finances	
		Catalogs, publications and promotional materials.		Link with the community. Graduate program
	Innovation and experimentation.			

Source: <http://www.abet.org>, [www.sacs.org](http://www.sacs.org)

## TYPES OF INTERNATIONAL ACCREDITATIONS

Currently, the accrediting agencies offer two kinds of international accreditation.

1. Institutional accreditation. - Comprises an evaluation of the whole institution as an educational entity assigning an accreditation that measures the level of quality in different areas such as: educational programs, teaching staff, operating systems, student services, linkage with community, among others.
2. Accreditation per program. - This type of accreditation is primarily focused on the different aspects of the curricula offered, such as: educational model, content, program vision, and primarily on the entry and egress profile.

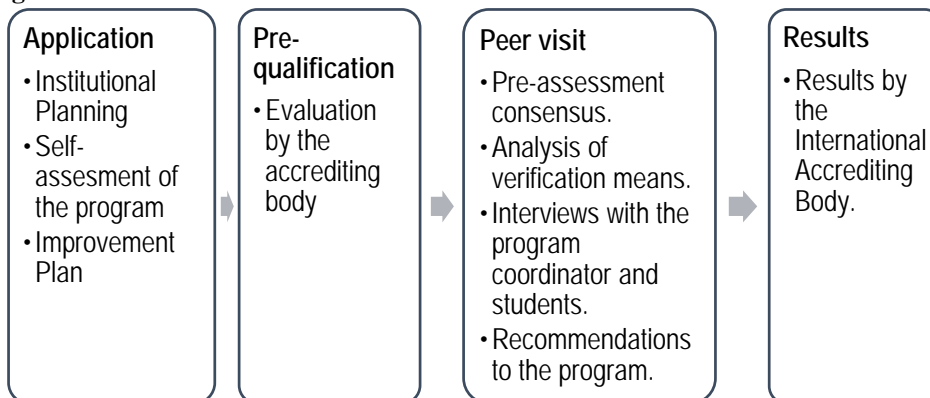
Universities can decide which type of accreditation to achieve depending mainly on the security and recognition of the accrediting agency, the allocated budget the support of the teaching staff and the resources.

## MECHANISM FOR THE PLANNING OF THE ASSESSMENT

As shown in figure 2, once the institution has decided to conduct the external evaluation, the process begin with the application for a membership with the Accrediting Agency. Also, almost simultaneously, the planning of all the required activities to meet the accreditation standards and criteria begins. This stage involves the compilation of information as evidence of criteria compliance. The resulting information is then summarized and presented as the self-study.

The third step is known as the peer visit. For most international agencies the assessment process is carried out worldwide with reviewers traveling internationally to facilities. Finally, the fourth step is the assessment report, where the Accrediting Agency gives resolution whether the university or program becomes accredited.

**Figure 1:** Process within international accreditation



Source: <http://www.abet.org> [www.sacs.org](http://www.sacs.org)

## ORGANIZATIONAL STRUCTURE OF ACCREDITATION BODIES.

As shown on figure 3 the operative structure of each accrediting agency consists of three groups: The accreditation commission, the technical committees and the evaluating peers or auditors. The functions of each group are described as follows.

### THE ACCREDITATION COMMISSION

This commission is mainly formed by recognized professional experts in the area of knowledge. Most often are academics or professionals with broad experience, some already retired that agreed to form part of these commissions.

Their main function is to receive the self-study of the candidate entity to be accredited, once the study is examined, the commission dictates whether it is subject or candidate to be accredited. In some cases, the commission recommends or suggests changes in educational programs or models before competing for international accreditation. In some cases, the commission may also suggest to obtain first the national accreditation, and subsequent to this, the international accreditation. Once the final decision takes place the application and the self-assessment is delivered to the technical committees.

### TECHNICAL COMMITTEES FUNCTIONS

Accreditation Comissions	Technical Comittees	Audit Teams
<ul style="list-style-type: none"><li>• Set up the standards, procedures and requirements for accreditation.</li><li>• Nominate the members of the Technical Committees.</li><li>• Nominate the Audit-Teams.</li><li>• Issue the accretitation decision on the basis of the peer review results</li></ul>	<ul style="list-style-type: none"><li>• Develop and Improve the field-specific criteria for the study.</li><li>• propose the experts for the audit-teams.</li><li>• Check report statements of the peers.</li><li>• Make a recommendation to the accreditation comissions.</li></ul>	<ul style="list-style-type: none"><li>• 4-5 persons (Industry and both types of universities)</li><li>• Briefing</li><li>• View documents of the University</li><li>• Visit and interview the University (2 days)</li><li>• Create final report</li><li>• Coordinate the final report with the university.</li><li>• Give report and statement with recommendations to Technical Committees and Accreditation Commission.</li></ul>

These groups of peer reviewers have as primary function to establish evaluation standards. Their job is very interesting and innovator because they transform the educational tendencies in evaluation or revision standards. This sum of criteria is transformed into guides to perform comparative evaluation among the standards and the operative development of the academic program.

It is considered a good practice to organize an annual conference to present both, the members of the accreditation agency as well as potential candidates, the evaluation standards. And in parallel in those events are organized workshops to describe how the evidence is gathered to comply with the accreditation standards. Technical committees are one of the columns of each accrediting agency, so it should be subject to a careful selection of members

### REQUIREMENTS FOR MEXICAN UNIVERSITIES

It can be mentioned that the educational policy of accreditation in Mexico began in the 90s, where the objective was the evaluation of the educational processes at the universities. The Federal government created the Federal Inter-institutional Committee for Higher Education Evaluation or in Spanish: *Comités Interinstitucionales para la Evaluación de la Educación Superior (CIIES)*. Their main task was to diagnose and evaluate educational programs without being considered an accreditation. It was until 2000's that the Public Education Secretariat (*Secretaría de Educación Pública*) (SEP) recognized the creation of the Council for Higher Education Accreditation or in Spanish: *Consejo para la Acreditación de la Educación Superior (COPAES)*, and delegated the accreditation of academic programs of higher education of public and private universities (Buendía 2011). Operationally, the COPAES do not accredits the educational programs, it only gives its backing to the organizations in charge of evaluating academic programs. Among its activities are the following:

- Development of criteria and guidelines to formally recognize the national accreditation bodies.
- Spread of nationally recognized accrediting agencies.
- Monitoring and supervision of academic rigor and impartiality of the accreditation bodies (COPAES, 2013)

The accreditation process is integrated, in most cases, in five stages:

1. Application for accreditation of educational program.
2. Compliance with the conditions of the accreditation process.
3. Preparation and presentation of a self-study that enables institutions to learn their inputs, processes, outcomes and the extent to which they contribute to corporate goals based on the guidance provided by the accrediting body.
4. Evaluation process by the accreditation body.
5. Final decision that mentions whether the program was accredited or not.

One of the authors of accreditation exercises, (Rama, 2009), states that accreditation can be used as a mechanism of differentiation to identify which universities cover certain requirements



of educational quality. (Sobrinho, 2012) criticizes by noting that the main objective of accreditation is the bureaucratic, legal and formal control of quality assurance.

As can be seen, accreditation at that level is a tool of control and educational quality assurance. Later, it will be shown the international accreditation and what have been the global trends of countries and universities regarding the main objectives and functions of accreditation and what have been their impact within the academic management of institutions.

## THE COST OF INTERNATIONAL ACCREDITATION

Finally all come about the cost of accreditation, or as some agencies call it: investment in quality assurance. The cost of accreditation process has a wide range of options, but a good practice is when the planning for having an international accreditation begins; it is convenient to keep in mind the following phases in the process:

- Phase 1: Selecting the agency:
  - Check references and previous evaluations.
  - Be sure to contact them (even e-mail) to verify proper identification. In some cases, for Mexican Universities, some agencies do not carry out accreditation outside the USA, like the APA. Some other do not offer an accreditation per se, they offer a “substantial equivalency” which technically is the same, but with another name for outside the USA.
  - Verify if they are recognize by the CHEA (Council for Higher Education Accreditation). It means the agency has the US government approval.
- Phase 2. Starting the process:
  - Be sure that the selected agency sent the accreditation standards or download them from their web page. Usually some agencies update the standards according with the year in course. This will give the Mexican university, an idea of the feasibility of the process. Some agencies may send some auditor, in this case the travel expenses as well as the auditor’s fee has to be included.
- Phase 3. Membership:
  - Some agencies require the membership as an initial fee. Others just do not.
- Phase 4: Subject of accreditation:
  - Depending on the intention and objectives of the international accreditation, it can be selected form two types of international accreditation: Program accreditation or Institutional accreditation. Cost can be significantly different. In the Institutional type, cost and time could be higher.
  - In any case the university should ask for a consultation.
- Phase 5: Accreditation Fee:
  - It can go from \$1,000 USD to \$30,000 USD depending on the agency location (US or Europe as the most recurrent).
  - Program or institutional accreditation impact on the cost, in this case, one recommendation for Mexican universities is to start with just one program at a time. This could be budget friendly.

## FINAL REMARKS

The civil engineering profession faces great challenges at a global level. Often, for example, a company can develop a project in South America by following North American design standards while engineered in a remote country. The graduate must possess a diverse set of skills and a continuous improvement mentality as the foundation for a satisfactory professional development.

Although the national and international accreditations are not mandatory in higher education institutions, these are important to ensure the quality of education and add value to both the institution, by giving public recognition, and to the alumni by providing a competent education on a national and international level. In some cases, having a degree from an accredited program may also enhance professional mobility, as a proof of an adequate academic background, towards an international career.

To standardize the curricula among institutions results a complicated task, even within the same country. However, it is important for higher education to adapt to the market needs and have a dynamic stance by continuously improving the educational programs.

There is no doubt that international accreditation is one of the important trends within university planning. In terms of benefits, as previously discussed, the international accreditations are a seal of academic prestige, and in parallel with the national accreditations it is an instrument of educational quality assurance.

This study intends to explore the basic concepts and the critical factors such as, the standards, criteria and cost. This tool allows Mexican universities to cooperate with the placement of its graduates abroad through the recognition of their educational degrees, and above all, by developing in the alumni the needed skills to get a degree equivalency and thus recognition. The program in civil engineering is, as considered in this study, the eligible program that can be recognized in the international labor market, which is undoubtedly the response of education to the challenges of globalization faced by universities.

It must be noted, as the next step in the commercial agreements between countries, the mobility of professions and professionals, which has been successfully implemented in the European Union, and that can be undoubtedly the next step in the development of the Mexican commercial agreements with the world.

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# NAFTA Panel Arbitration of Investment Disputes

JOSEPH A. MCKINNEY<sup>1</sup>  
Baylor University, Waco, Texas, USA

*The investor-state dispute settlement provisions of NAFTA's investment chapter provide for mandatory arbitration of disputes before the special arbitration bodies of the World Bank or the United Nations. National governments can be required to pay damages to foreign corporations for the loss of expected profits resulting from changes in national, state (provincial) or local regulations. Concerns have been raised about the possible threat to environmental standards, to natural resource policies, and to health and safety standards. This paper will examine experience to date under Chapter 11 provisions and assess to what degree, if any, they have been problematic.*

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<sup>1</sup> Address correspondence to Joseph A. McKinney, Ben H. Williams Professor of International Economics, Baylor University, Waco, Texas, USA. E-mail: [Joe\\_McKinney@baylor.edu](mailto:Joe_McKinney@baylor.edu)

# **Subpar Performance of the Mexican Economy in the NAFTA Era: Plausible Explanations**

CHU V. NGUYEN, PH.D.<sup>1</sup>  
*College of Business, University of Houston-Downtown  
Houston, Texas, USA*

*Since 1994 the peso/USD monthly real exchange rate conforms to the Purchasing Power Parity Theory. Evidently, Mexico has opened its economy and moved away from pre-NAFTA exchange rate interventionist policies. Mexico has tamed inflation – since 1999 the inflation rate has been stable relative to the U.S. inflation rate. Notwithstanding these impressive accomplishments, Mexico's real GDP growth rate has lagged behind that of several Latin American countries. Probably, the perceived state of lawlessness has dampened foreign investment, and tourism. Additionally, higher labor costs relative to China have adversely affected manufacturing sector exports.*

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<sup>1</sup> Address correspondence to Chu V. Nguyen, Ph.D., Associate Professor of Economics and Finance, Chairman, FAMIS Department, College of Business, University of Houston-Downtown, 320 North Main St., Suite 410-D, Houston, Texas 77002, USA. E-mail: [nguyenchu@uhd.edu](mailto:nguyenchu@uhd.edu)

## 1. INTRODUCTION

The main objective of the North American Free Trade Agreement (NAFTA) was to lock in a set of economic policies which would ease restrictions on Mexico's manufacturing sector and allow greater foreign investment and ownership (Weisbrot et al., 2014). As some reforms had already been implemented during the previous decade, the argument put forth in support of NAFTA was that the continuation and expansion of these policies would allow Mexico to achieve efficiencies and economic progress that were not possible under the developmentalist, protectionist economic model that had prevailed in the decades before 1980.

Since the early 1960's, Mexico's economy has experienced some periods of sustained economic growth. Between 1960 and 1980, the Mexican economy grew at an average annual rate of over 6.5 percent, resulting in significant improvements in per capita gross domestic product (GDP) and living standards during that time period. In the ensuing years, however, the average real GDP growth dropped due to the 1982 debt crisis, which resulted in productivity growth falling to negative numbers. Economic reforms introduced in the latter part of the 1980s helped stimulate economic growth resulting in average annual GDP growth of 3.8 percent between 1990 and 1994. To culminate this progress, Mexico entered into NAFTA with Canada and the United States. NAFTA is an agreement signed by Canada, Mexico, and the United States and entered into force on 1 January 1994 in order to establish a trilateral trade bloc in North America (Villarreal, 2010).

At the end of 1993 Mexico was considered as a model for developing countries. Five years of prudent fiscal and monetary policy had dramatically lowered its budget deficit and inflation rate and the government had privatized many enterprises that were formerly state-owned. But less than a year after NAFTA was implemented, in December 1994, investors began liquidating their peso denominated assets, causing the value of the Mexican peso to plunge 50.0 percent against the U.S. dollar. Mexico was forced to borrow from the International Monetary Fund (IMF) and the United States to get through the financial crisis. In 1995, inflation in Mexico soared to 50.0 percent and real GDP fell by 4.0 percent (Neely, 1996).

Additionally, after the 1995 financial crisis, GDP growth declined by 6.2 percent, and then increased in the following three years by 5.0 - 6.0 percent annually. Real GDP growth dropped from 6.2 percent in 2000 to -0.2 percent in 2001. After 2001, economic conditions in the United States improved, which helped economic growth in the Mexican economy. Real GDP growth in 2004 was 4.0 percent, up from 0.8 percent in 2003 and 2002. In 2006, GDP grew by 4.9 percent but decreased to 3.3 percent in 2007. Real GDP grew by only 1.5 percent in 2008. The 2009 global financial crisis had a strong adverse effect on the Mexican economy, and the GDP growth rate contracted by 6.6 percent (Neely, 1996).

As to the history of exchange rate policy, before the enactment of NAFTA, Mexico pursued a managed flexible float regime from August 5, 1985 to November 10, 1991; an exchange rate bands with managed slippage from November 11, 1991 to December 21, 1994; and a free float from December 22, 1994 to present.

These early economic challenges during the first few years of the NAFTA era saw many politicians, including billionaire and one-time presidential candidate Ross Perot, along with noted

commentators Pat Buchanan, William Greider, and Robert Kuttner blaming the enactment of NAFTA for the devaluation of the peso and the ensuing economic turmoil in Mexico, with some calling for its renegotiation or even repeal (Neely, 1996).

The continuing poor performance of the Mexican economy has spawned research in search of plausible explanations (Weisbrot et al., 2014; Weisbrot and Ray, 2011; Weisbrot et al., 2004; Villarreal, 2010; Neely, 1996; Blavy and Juvenal, 2008; and Kose et al., 2004). Theoretically, for a small and open economy such as the Mexico's, one or a combination of the following factors may be the causes for its poor performance: policy measures that affect the international trade flows (i.e. protective tariffs), quantity restrictions, special license and permits; or exogenous factors such as business cycles, international competitions; and exchange rate policy.

There is no doubt that NAFTA plays a very strong role in the bilateral economic relationship between Mexico and the United States. These two countries are also closely tied in areas not directly related to trade and investment such as national security, environmental issues including pollution, migration of Mexican nationals, and public health issues (Villarreal, 2010). NAFTA also eliminates almost all policy measures that impact the flow of international trade, such as protective tariffs, quantity restrictions, special licenses and permits that the parties involved may use to control their bilateral export and import flows. Therefore, the poor performance of the Mexican economy must be exogenous from these policy measures.

In regards to the exogenous factors, the IMF notes that “Mexico competes directly with China in the U.S. market, where China accounts for 23.0 percent of U.S. imports and Mexico accounts for 12.0 percent.” This is a very tough competition for Mexico for a number of reasons. First, Mexico was and remains a higher-wage country than China. Second, China has maintained a commitment to a competitive exchange rate, in effect fixing this exchange rate against the dollar or (since 2005) a basket of currencies. The Mexican Central Bank by contrast has, as the IMF notes, “a firm commitment to exchange rate flexibility.” This means that Mexico's exchange rate is unlikely to be competitive with China's, which further worsens its cost disadvantage. The Mexican Central Bank's form of rigid inflation targeting also adds a large element of unpredictability to the exchange rate, which has a negative impact on foreign direct investment; foreign investors will find it difficult to know how much their assets or output will be worth internationally in the future (Weisbrot et al., 2014).

Moreover, China has other advantages that make it a formidable competitor for Mexico in the U.S. market: the Chinese government owns most of the banking system in China, and can therefore ensure that its most important exporting firms have sufficient access to credit. In Mexico, by contrast, 70.0 percent of the banking system is not only private but foreign-owned. The Chinese government also has an active industrial policy that enables it to help its exporting firms in various ways, and spends vastly more on research and development – both in absolute terms and as a percentage of its economy (Weisbrot et al., 2014).

NAFTA also increasingly tied Mexico to the U.S. economy at a time when the U.S. economy was becoming dependent on growth driven by asset bubbles. As a result, Mexico suffered a recession when the stock market bubble burst in 2000-2002, and was one the hardest hit countries in the region during the U.S. Great Recession, with a drop of 6.7 percent of GDP. The

Mexican economy was even harder hit by the peso crisis in 1994-95, losing 9.5 percent of GDP during the downturn; the crisis was caused by the U.S. Federal Reserve raising interest rates in 1994.

Finally, the vulnerability to developments in U.S. financial markets continues: In May of 2013, after the U.S. Federal Reserve announced a future “tapering” of its quantitative easing program (QE1, QE2, and QE3), there were fears of a repeat of the 1994 peso crisis, and gross foreign portfolio inflows came to a sudden stop. The Mexican economy took a hit, with projected growth at 1.22 percent for the year. This was mostly because, as the IMF noted, “Mexico’s deep and liquid foreign exchange and domestic equity and sovereign bond markets can serve as an early port of call for global investors in episodes of financial turbulence and hence are susceptible to risks of contagion.” This vulnerability is also a result of the policies that NAFTA was designed to facilitate (Weisbrot et al., 2014).

With regard to foreign exchange policy as a factor contributing to the subpar performance of the Mexican economy, except for the aforementioned China’s commitment to a competitive exchange rate, in effect fixing this exchange rate against the dollar or (since 2005) a basket of currencies while the Mexican Central Bank’s firm commitment to exchange rate flexibility; as far as it may be ascertained, there is no other analysis on the Mexico’s real exchange rate and its competitive position in bilateral export markets with the U.S. Consequently, the objective of this study is to empirically investigate the behavior of the real exchange rate of Mexico and its competitive position in the bilateral export market with the US in the NAFTA era.

The remainder of this investigation is organized as follows. Section 2 summarizes some stylized facts of the Mexican economy in the NAFTA era; Section 3 reviews the literature on the impacts of exchange rate changes on the economy; section 4 introduces the framework for this empirical investigation; section 5 describes the data and variables; section 6 summarizes the methodology; section 7 reports and discusses the results and; section 8 synthesizes causes of the subpar performance of the Mexican economy; and section 9 provides some concluding remarks.

## 2. STYLIZED FACTS OF THE MEXICAN ECONOMY IN THE NAFTA ERA

Weisbrot et al. (2014) illustrate the following stylized facts of the performance of the Mexican economy as compared to the rest of the region over the past 20 years, based on the available economic and social indicators, and with its own past economic performance. Among the results:

- (i) At the time that NAFTA went into effect, bringing Mexico into a new commercial agreement with the United States and Canada, it was argued, and forecast, that the agreement would boost Mexico’s growth and development;
- (ii) Mexico is currently ranked 18<sup>th</sup> of 20 Latin American countries in growth of real GDP per person, the most basic economic measure of living standards;
- (iii) From 1960-1980, Mexican real GDP per person almost doubled, growing by 98.7 percent. By comparison, in the past 20 years it has grown by just 18.6 percent;
- (iv) Mexico’s per capita GDP growth of just 18.6 percent over the past 20 years is about half of the rate of growth achieved by the rest of Latin America;



- (v) If NAFTA had been successful in restoring Mexico's pre-1980 growth rate – when economic development policies in Prebisch-Singer Hypothesis tradition were the norm – Mexico today would be a relatively high income country, with income per person significantly higher than that of Portugal or Greece. It is unlikely that immigration reform would be a major political issue in the United States, since relatively few Mexicans would seek to cross the border;
- (vi) According to Mexican national statistics, Mexico's poverty rate of 52.3 percent in 2012 is almost identical to the poverty rate of 1994. As a result, there were 14.3 million more Mexicans living below the poverty line as of 2012 (the latest data available) than in 1994;
- (vii) The poverty statistics reported by the UN Economic Commission on Latin America indicate that the rest of Latin American drop in poverty was more than two and a half times as much as that of Mexico;
- (viii) Real (inflation-adjusted) wages for Mexico were almost the same in 2012 as in 1994, up just 2.3 percent over 18 years, and barely above their level of 1980;
- (ix) Unemployment in Mexico is 5.0 percent today, as compared to an average of 3.1 percent for 1990-1994 and a low of 2.2 percent in 2000; these numbers seriously understate the true lack of jobs, but they show a significant deterioration in the labor market during the NAFTA years;
- (x) NAFTA also had a severe impact on agricultural employment, as U.S. subsidized corn and other products wiped out family farmers in Mexico. From 1991-2007, there were 4.9 million.

These stylized facts clearly illustrate a very poor performance of the Mexican economy as compared to itself or those of its neighboring countries, over time.

### 3. BRIEF LITERATURE REVIEW

Management of the real exchange rate is central for economic growth. Unfortunately, international economic and finance theories do not provide definitive guidance on the causal relationship between exchange rate changes and output growth; the debates are usually informed by empirical analyses that often yield ambiguous results.

The more traditional argument typically emphasizes that overvaluation harms growth and calls for the exchange rate to be at its “equilibrium” level (Easterly, 2005). However, undervalued exchange rates are optimal for developing countries, as they lead to periods of economic activity and employment growth (Rodrik, 2008 and Bhalla, 2012). That is, not only would overvaluation be harmful (which is linked to macroeconomic instability, balance of payments crises, stop-go economic growth, rent-seeking and corrupt practices), but undervaluation would be conducive to growth. Rodrik (2008), relying on a panel dataset of 184 countries observed during the 1954-2004 period, regresses per capita GDP growth on an index of undervaluation and GDP per capita and accounts for fixed effects and year-specific dummies. The author finds that undervaluation is systematically associated with periods of high growth, an effect that is large and significant for poor countries. Arguably, this is because undervaluation leads production factors to move in the direction of the tradable (export and import-competing) sectors, which tend to have higher productivity growth rates (Cottani et al., 1990), and to exhibit larger economies of scale, learning by doing, and knowledge spillovers (Rodrik, 2008); making an economy more

competitive, increasing its domestic profitability and investment, and ultimately spurring growth (Bhalla, 2012).

However, it is entirely possible that exchange rate devaluations can cause a reduction in output, known as *contractionary devaluation*, where Mexico was explicitly cited as example of this phenomenon (Dhasmana, 2015). Moreover, Purchasing Power Parity (PPP) theory articulates that currency devaluation would be followed by high inflation rates, a decline in national income (which could foment discontent, and lead to social unrest), and a rise in cyclical instability, personal bankruptcies, and speculation in the real estate and equity markets. Also, the scale and scope of negative impacts are influenced by the culture, and degree of economic and political freedom of the country.

One of the major issues encompassing the exchange rate literature has been the choice of exchange rate regime. This topic matter has been a subject of ongoing debate in international economics (Priyo, 2009; Bailliu et al., 2002). The debate has spawned a number of empirical studies on the existence of the relationship between economic growth and the choice of exchange rate regime. Some of the empirical results showed that no relationship exists between exchange rate regime and economic growth (Ghosh et al., 1997; the IMF study, 1997) while others have found evidence linking the two (Bailliu et al., 2001; Calvo and Reinhart, 2000; Levy Yeyati and Sturzenegger, 1999; Levy Yeyati and Sturzenegger, 2001). However, none of these studies seem to be able to answer which regime is the best in terms of achieving fast sustainable economic growth. To this end, it is true that the choice of the regime and its success depend on individual countries and their own economic considerations and environments (Dehejia, 2003).

Moreover, while the advantages of freely floating regime are well known, it is still debated whether this regime is suitable for less developed countries. The problem of destabilizing speculation and consequent excessive exchange rate volatility appears to be exacerbated in developing countries, making a floating regime especially unviable/unsuitable, particularly in the absence of a resilient and developed financial system (Hossain et al., 2009; Grenville and Gruen, 1999). After the Asian and Latin American crises in the 1990s, there has been a growing tendency among countries to adopt a corner regime—either a fixed or a floating regime. However, many studies document that the way developing countries float is not consistent with the characteristics of clean floats (Hausmann et al., 2001; Hernandez and Montiel, 2003).

#### 4. FRAMEWORK FOR EMPIRICAL INVESTIGATION

International finance literature theory articulates that changes in a country's exchange rate impact its gross domestic product and unemployment. Additionally, fluctuations in a home country's inflation alter the inflation rate differential between the home country and its trading partners. Under relative purchasing power parity (PPP), the differential inflation rates in the two economies must be exactly offset by changes in the respective nominal exchange rates so that the two countries' competitive positions will be unaffected (Eun and Resnick, 2007). In this context, the real exchange rate sheds light on the home country's competitive position relative to the trading partner. The real exchange rate is denoted by  $q$ , and is expressed as,

$$q = \frac{1 + \pi_{hc}}{(1 + \varepsilon_{hc,tp})(1 + \pi_{tp})} \quad (1)$$

where  $\pi_{hc}$  is the home country's inflation rate,  $hc$  = home country (Mexico in this study);  $\pi_{tp}$  is the inflation rate of its trading partner  $tp$ , and  $(1 + \varepsilon_{hc,tp})$  is the ratio of home country's currency - currency of its trading partner  $tp$  exchange rate to this exchange rate in the previous period.

Under PPP, the real exchange rate is unitary,  $q = 1$ . Other things equal, as the domestic currency price of its trading partner's currency rises, the real exchange rate decreases, improving the home country's competitive position vis-a-vis the trading partner. Likewise, other things equal, if the home country's inflation rate exceeds that of its trading partner, then  $q$  rises above unity with a consequent deterioration of the home country's competitive position and all the attendant negative effects on its economy. In this case to prevent a rise in the real exchange rate, the home country's currency price of the trading partner's currency must rise to reflect the inflation differential.

## 5. DATA AND VARIABLES

In this study, monthly time series data on nominal exchange rates between the Mexican peso vs the U.S. dollar and consumer price indices in Mexico and the U.S. are used to calculate the real exchange rate  $q$ , expressed by equation (1) to study the Mexican competitive position in bilateral export markets with the U.S. The data for all-time series are from the Board of Governors of the Federal Reserve System and the FRED of the Federal Reserve Bank of St. Louis.

## 6. METHODOLOGY

As always, monthly data contains a lot of noise. Additionally, there are some degree of rigidity in business operations, i.e., their business plans cannot be changed monthly; therefore, there is time lag in export markets' reactions to changes in monthly real exchange rate. Also, the above calculated  $q$ , using monthly data, should be expected to be different from unity. The questions as to whether the calculated real exchange rate,  $q$ , is statistically different from unity at any conventional levels of significance.

To address the excessive noise in the monthly data and the rigidity in business operations, this study will calculate and analyze the 12-month, 24-month and 36-month moving averages of the  $q$ , in addition to its monthly values.

To scientifically substantiate the conclusion whether or not the calculated real exchange rate,  $q$ , is statistically different from unity at conventional levels of significance, this study calculates the  $\pm 2$  standard errors of the 12-month, 24-month and 36-month moving averages of the  $q$  to determine if the band of the  $\pm 2$  standard errors of any of these moving averages contains the unity, i.e., the line  $q = 1$ .

If  $\sigma_q$  and  $\mu_q$  are respectively the standard deviation and the mean of a calculated time series of moving averages of a given  $q$ ; then, under the normality assumption, which would be tested using the Doornik and Hansen's (1994) test statistic, probability theory states:

$$\Pr(\mu_q - 2\sigma_q \leq \mu_q \leq \mu_q + 2\sigma_q) = 95.4\%$$

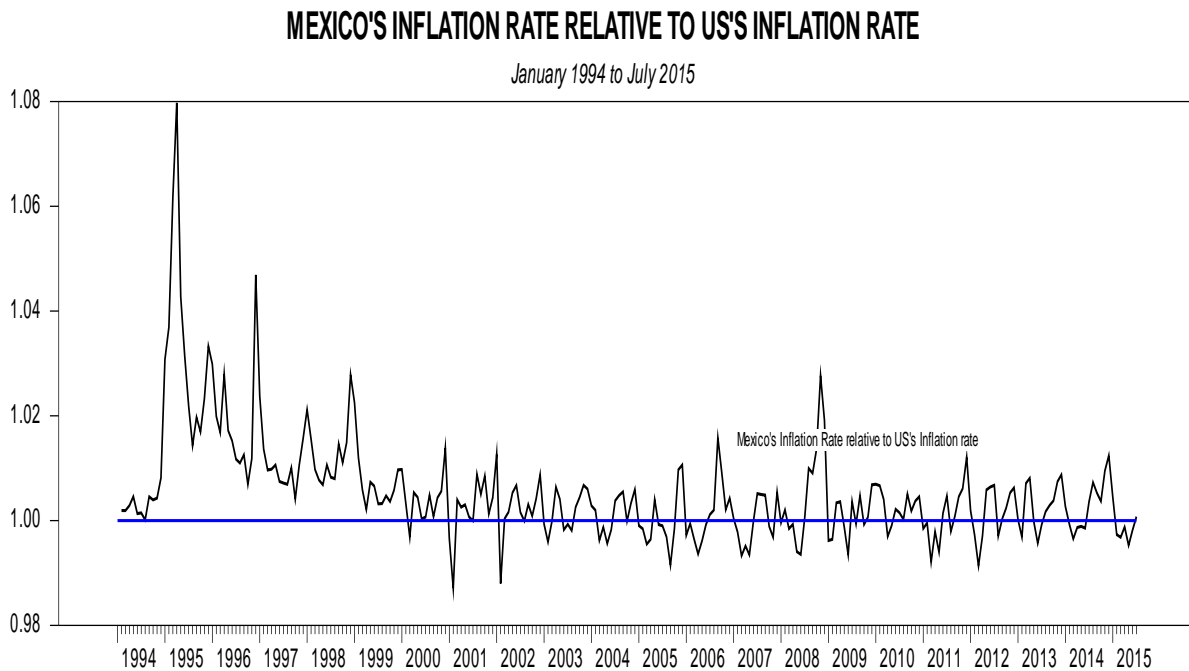
As described by equation (1), under PPP, the real exchange rate is expected to be unitary,  $q = 1$ . Therefore, if the band of the  $\pm 2$  standard errors of any of these moving averages series  $q$  contains the unity, the probability for that series to be statistically equal to 1 is 95.4 percent and to be different than one is 4.5 percent.

Statistically, the aforementioned can be restated as if the band of the  $\pm 2$  standard errors of any of these moving averages series  $q$  contains the unity, the hypothesis that the series  $q$  is different from one should be rejected at 5 percent level of significance.

## 7. EMPIRICAL RESULTS

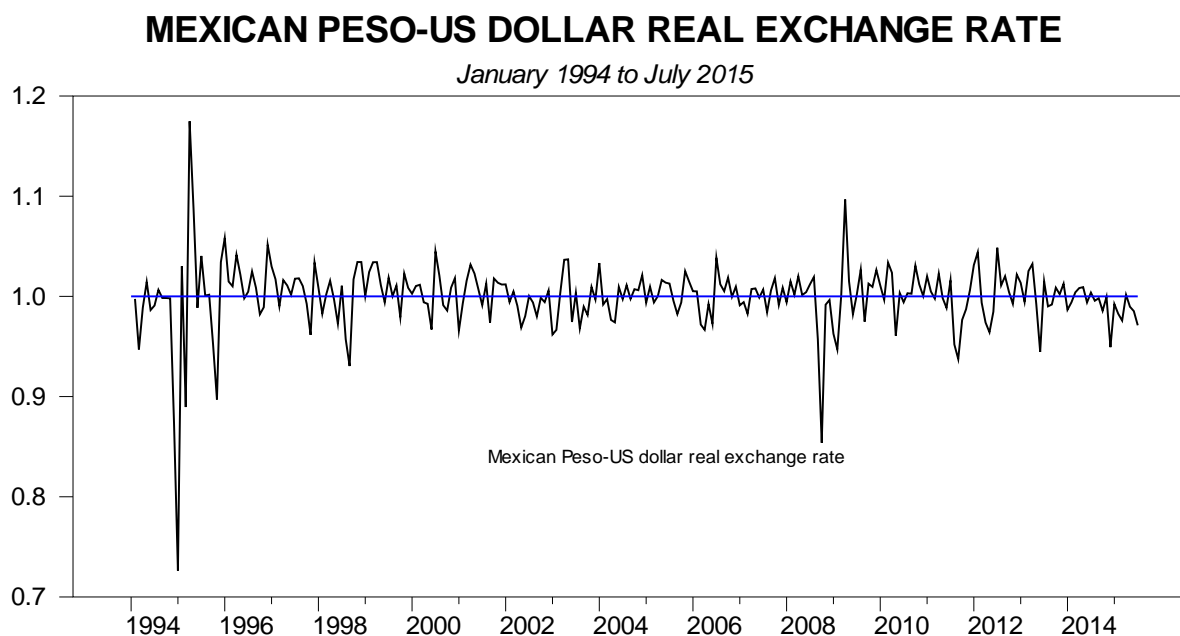
The Mexican inflation rate relative to the inflation rate in the U.S. over the sample period is graphically illustrated in Figure 1. A close look at the figure suggests that the Mexican inflation rate is relatively higher than that one in the U.S. and since 1999 it has been stable relative to the U.S. inflation rate.

**Figure 1**



The Mexican peso-U.S. dollar real exchange rate was calculated and graphically illustrated in Figure 2.

Figure 2



Before testing for normality, this investigation utilizes the Kwiatkowski-Phillips-Schmidt-Shin test to determine the stationarity of the Mexican real exchange rate series. The testing result reveals that with 258 observations and as compared to the 1 percent level of significance of 0.7390, the calculated Kwiatkowski-Phillips-Schmidt-Shin test statistic being 0.070774 suggests that the calculated Mexican real exchange is stationary.

It is well known that all tests for normality are sensitive to outliers in the series being tested and the usual method to remove the impact of outliers is to dummy them out. This study calculates and analyzes the Mexican real exchange rate for more than two decades during which many extraordinary events, political, economic, and otherwise occurred both in Mexico and in the world. These events no doubt affected the performance of the Mexican real exchange rate, resulting in many outliers in the series. In fact, the Doornik and Hansen's (1994) test statistic rejects the null hypothesis of normality for the entire calculated Mexican real exchange rate series.

To correct the impact of the outliers causing rejection of normality assumption, this study uses the recursive Chow test to identify outliers in the Mexican real exchange rate series and dummies them out of the series. The Doornik and Hansen's (1994) test statistic is then used to test for the normality of the resulting series. The recursive Chow test identifies the outliers in the series in December 1994, January 1995, March 1995, April 1995, May 1995, November 1995, January 1996, September 1998, October 2008, April 2009, August 2011, September 2011, and June 2013. The calculated Doornik and Hansen's (1994) test statistic testing the null hypothesis that the Mexican real exchange rate series (after the above outliers are dummied out) is normally

distributed with the significant levels in parenthesis is 3.5421 (0.1702.) This empirical result suggests that the null hypotheses should not be rejected at any conventional levels of significance. Failure to reject the null hypothesis of normality, indicates that the Mexican real exchange rate series is in fact normally distributed.

Given that the real exchange rate is normally distributed and there are some degree of rigidity in business operations, it is informative to determine if the band of the  $\pm 2$  standard errors of any of these moving averages series of the Mexican real exchange rate  $q$  contains the unity. Since, if the band of the  $\pm 2$  standard errors of a moving average of a given series contains the unity, the hypothesis that the series in question is different from one should be rejected at 5 percent level of significance.

The gallery of graphs below, Figures, 3, 4, and 5, illustrates the 12-month, 24-month and 36-month moving averages and their  $\pm 2$  standard errors of the Mexican real exchange rate over the sample period.

Figure 3

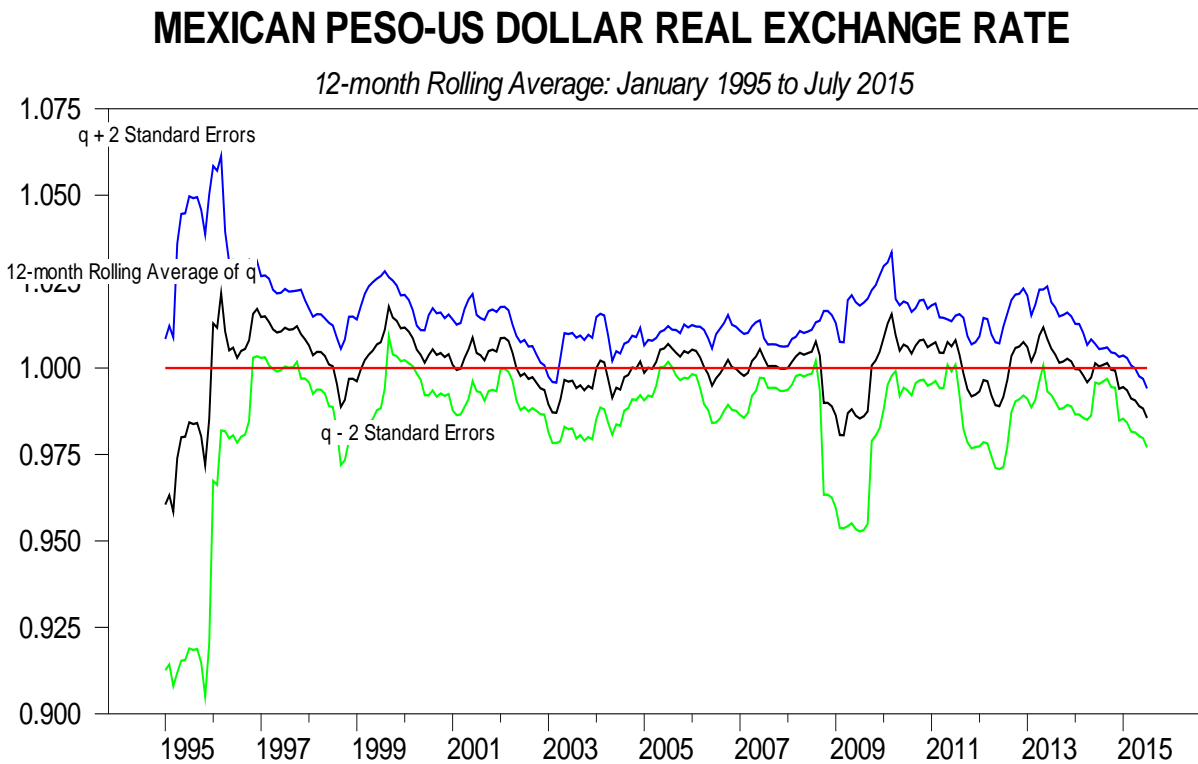


Figure 4

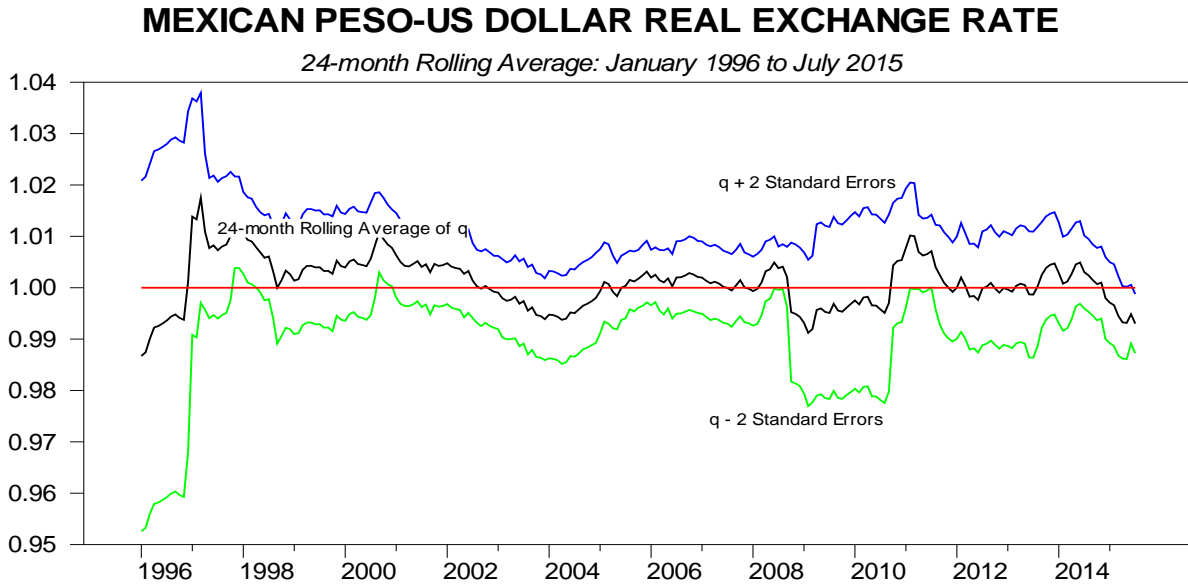
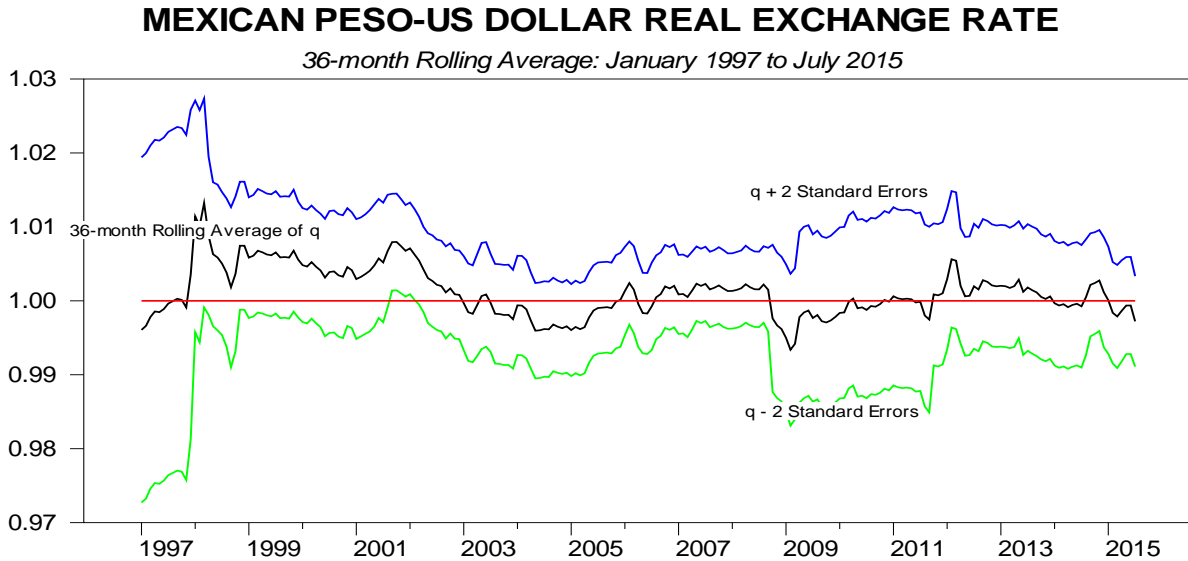


Figure 5



An analysis of the results reveals that, except for the 12-month moving average and only in the months of 2015, the bands of the  $\pm 2$  standard errors all other moving averages of the Mexican real exchange rate contain the unity. This empirical finding suggests that, except for the few months of 2015, the Mexican real exchange is consistent with the predictions by the PPP theory.

## 8. SYNTHESIZING CAUSES OF THE SUBPAR PERFORMANCE OF MEXICAN ECONOMY

It can be argued that not all changes in economic growth or trade and investment patterns in Mexico since 1994 can be attributed to NAFTA. The economy has also been affected by other factors such as Mexico's previous market-opening measures in Mexico, financial crises, exchange rates, oil prices, and business cycles. Trade-related job gains and losses since NAFTA probably accelerated trends that were ongoing prior to NAFTA and are not totally attributable to the trade agreement. Isolating the economic effects of NAFTA from other economic or political factors is difficult. Mexico has experienced at least two major events outside of NAFTA that had significant economic consequences. Unilateral trade liberalization measures prior to NAFTA and the currency crisis of 1995 both affected economic growth, per capita GDP, and real wages in Mexico (Villarreal, 2010).

As aforementioned, one or a combination of the following factors may be the causes for its poor performance: policy measures that affect the international trade flows, such as protective tariffs, quantity restrictions, special licenses and permits; exogenous factors such as business cycles, international competitions; and exchange rate policy. NAFTA also eliminates almost all policy measures that affect the international trade flows, such as protective tariffs, quantity restrictions, special licenses and permits that the parties involved may use to control their bilateral export and import flows. The empirical results of this investigation suggests that the Mexican real exchange rate is consistent with predations of the PPP theory; therefore, the poor performance of the Mexican economy must be mostly exogenous from these policy measures.

Additionally, standard trade theory argues that NAFTA would allow the Mexican economy to specialize in productions of goods and services that it has comparative advantages against the U.S. Even though, Mexican economy's ability to produce manufacturing commodities is much more advanced than its Latin American neighbors, it is about the same as China's. This, together with the aforementioned, magnifies the negative impact of China on the Mexican economy (Weisbrot et al., 2014).

Moreover, tourism is practically an export commodity of the country of destination, while foreign direct investment (FDI) increases its production capacities and hence increases GDP growth. The perceived state of lawlessness created by the drug war in Mexico has no doubt reduced tourism to this country and curtailed FDI inflows. These in turn would significantly contribute the observed poor performance of the Mexican economy in the NAFTA era.

In short, it is true whether comparison is to its developmentalist past, or to its Latin American neighbors, since NAFTA was implemented in 1994, the Mexican economy has performed fairly poorly. The empirical results of this investigations and the above synthetizations of the current literature strongly suggest that the while NAFTA may be the catalyst, exogenous factors such as Mexico's previous market-opening measures in Mexico, financial crises, oil prices, and business cycles, and most importantly the China factor, contribute to this subpar performance of the Mexico economy in the last two decades.



## 9. CONCLUDING REMARKS

At the end of 1993 Mexico was viewed as a model for developing countries in Latin America. Five years of prudent fiscal and monetary policy had lowered its budget deficit and inflation rate and the government had privatized many enterprises that were formerly state-owned. But less than a year later, in December 1994, investors sold their peso denominated assets and the value of the Mexican peso plunged 50.0 percent against the U.S. dollar, forcing Mexico to borrow from the International Monetary Fund and the United States to get through the financial crisis. In 1995, inflation in Mexico soared to 50.0 percent and real GDP fell by 4.0 percent. For the ensuing two decades, whether the comparison is with Mexico's developmentalist past or to other Latin American economies, the Mexican economy's performance is subpar.

The continuing poor performance of the Mexican economy has spawned research searching for plausible explanations. Theoretically, one or a combination of the following factors may have caused its poor performance: policy measures that affect the international trade flows, such as protective tariffs, quantity restrictions, special license and permits; exchange rate policy; and exogenous factor such as Mexico's previous market-opening measures, financial crises, oil prices, and business cycles.

NAFTA also eliminates nearly all policy measures that affect the international trade flows, such as protective tariffs, quantity restrictions, special license and permits that the parties involved may use to control their bilateral export and import flows. The empirical results of this investigation suggests that the Mexican real exchange rate is consistent with predations of the PPP theory; therefore, exchange rate policy may not be a contributing factor to the poor performance of the Mexican economy.

By deducting logic, the subpar performance of the Mexico economy in the last two decades or so may be attributable to (i) the Mexican economy's ability to produce manufacturing commodities at a more advanced level than its Latin American neighbors and at about the same level as China; (ii) Mexico's previous market-opening measures in Mexico, financial crises, oil prices, and business cycles; (iii) perceived state of lawlessness created by the drug war in Mexico; and (iv) most importantly, the China factor.

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# Mexico and the Trans-Pacific Partnership Agreement (TPP)

MARIA GUADALUPE ARREDONDO HIDALGO<sup>1</sup>  
*University of Guanajuato*  
*Guanajuato, Guanajuato, México*

*The upcoming investigation analyzes the information in relation to Mexico and its commercial interaction within the Trans-Pacific Partnership Agreement (TPP). The principal purpose is to compare and analyze the commercial relations between Mexico and all members that correspond with the TPP, identifying the product opportunities that are commercialized within this trade bloc. This documentary is a descriptive investigation with a longitudinal correlational design. The comparative charts contain data that is directly related to economical information such as the history of the bilateral relations, strategic sectors, balance of trade, and the relevant products that are commercialized for each country involved.*

**KEYWORDS**    *international trade; free trade agreement; Mexico.*

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<sup>1</sup> Address correspondence to Maria Guadalupe Arredondo Hidalgo, Division of Economic and Administration Sciences, Department of Business Administration and Management of Companies, University of Guanajuato, Predio 1 Fracc. El Establo, Guanajuato, Guanajuato, México. E-mail: [mg.arredondohidalgo@ugto.mx](mailto:mg.arredondohidalgo@ugto.mx)

## INTRODUCTION

Since 2015, it has been emphasized to work for the signing of the Trans-Pacific Partnership Agreement, where 12 countries, from three different continents, including Mexico, are involved. This article deals with the chronological history of this trade and the specific relations of these countries with Mexico, which analyzes the generation of trading opportunities for all economic sectors involved.

Mexico has been heavily involved in the global trading field since joining the General Agreement for Tariffs and Trade (GATT) in 1986. Since then, Mexico has signed ten international trade agreements with 45 countries, 32 agreements for the promotion and reciprocal protection of investments with 33 countries, 9 agreements limited in scope (Economic complementation agreements and partial scope agreements) under the Latin American Integration Association (ALADI) and recently joined as a member of the TPP.

Mexico's entry into the GATT in 1986, and the numerous trade agreements that were signed with other countries has led them to be on the global stage with a dynamic participation in the global trading field. In 1992, during the presidency of Carlos Salinas de Gortari, Mexico was decreed the Celebration of Treaties Law, which aims at regulating interagency treaties and agreements that the Mexican government will maintain internationally with one or more subjects from Public-International Law.

On April 6, 2011, during the administration of President Felipe Calderon, the Law on International Cooperation was authorized, which provided that international cooperation should be an essential objective to promote sustainable human development through actions that contribute to the eradication of poverty, unemployment, inequality and social exclusion; the permanent increase in scientific and technical education and cultural levels; the reduction of asymmetries between developed and developing countries; the pursuit of environmental protection and combating climate change; and strengthening public safety, based on the principles of international solidarity, defense and promotion of human rights, strengthening the rule of law, gender equality, promotion of sustainable development, transparency and accountability and criteria ownership, alignment, harmonization, managing for results and mutual accountability management. To this end, creates the Mexican Agency for International Development Cooperation (AMEXCID), which serves as a decentralized organ for institutional consolidation and construction of instruments for cooperation and international promotion of Mexico.

Prado (2014) addresses the concept of international cooperation for development based on solidarity for the welfare, both social and economic, to achieve or maintain a level that will be relevant in the process of international relations. This leads him to be a mechanism promoting values, culture and political presence that encourages exchanges between related countries. In the same way, Fanjul (2013) indicates that the cooperation should be an effective means to achieve a balance of interests and responsibilities to meet the challenges of this century.

**Table 1.** Chronology of the signing of international trade agreements with Mexico

Name of the agreement	Countries	Effective dates	Changes and modifications to the treaty
NAFTA	United States and Canada	January 1, 1994	*
Group of 3 (G3)	Colombia and Venezuela	January 1, 1995	November 19, 2006, Venezuela left the treaty
Bolivia	Bolivia	January 1, 1995	Such date announces the treaty
Costa Rica-Mexico	Costa Rica	January 1, 1995	This date fits Central America Treaty (CA) and stay in one multilateral treaty Costa Rica, Nicaragua, Honduras, Guatemala and El Salvador.
Nicaragua	Nicaragua	July 1, 1998	
Chile	Chile	August 1, 1999	*
TLCUEM – Decision 2/200	European Union	July 1, 2000	
Israel		July 1, 2000	
TN3-North Triangle	Guatemala, El Salvador y Honduras	March 15, 2001 Salvador and Guatemala June 1, 2001 Honduras	It becomes CA
European Free Trade Association (EFTA)	Iceland, Norway, Switzerland and Liechtenstein	July 1, 2001	
Uruguay	Uruguay	July 15, 2004	
Agreement to strengthen the economic partnership between the United Mexican States and Japan	Japan	April 1, 2005	*
Peru	Peru	February 1, 2012	*
Panama	Panama	July 1, 2015	
Trans-Pacific Partnership Agreement (TPP)	Australia, Brunei Darussalam, Canada, Chile, United States, Japan, Malaysia, New Zealand, Peru, Singapore and Vietnam	February 2016	

Source: Prepared with data from the Secretary of the Economy (2015).

\*We will have to wait to see how these treaties will turn whenever the TPPA's finally accepted.

## HISTORY OF MEXICO AND TPP

Drake-Brockman, Stephenson & Scollay (2011), made a chronology of TPP and indicated that the United States led the negotiations for the signature since 2008. It is commercial cooperation of 12 countries across four regions: Asia, Oceania, Latin America and North America. All countries involved include Malaysia, Singapore, Brunei, Vietnam Japan, Australia, New Zealand, Chile, Peru, United States, Canada and Mexico. The TPP is built on the Trans-Pacific Strategic Economic Partnership, known as the P4 agreement, comprising Singapore, Chile, New Zealand and Brunei, which entered into force in 2006.

From a business standpoint, Knight (2014) highlights the fact that large companies perceive the TPP as an incentive to promote international trade in the participating countries, but also emphasizes that small and medium enterprises (SMEs) and agro-industrial producers see it as a challenge where the regional competition would bring many dangers. Mexico's trade with the US is essential. Given this position, the US has directed its foreign policy towards its goal of expanding to participate more intensively in the Asian markets and as containment challenge posed by China's growth. Ramirez-Samudio (2011, p.44) states: "The trade interdependence between the US and East Asia explains the geopolitical shift of the Obama administration, ranging from the Middle East to Southeast Asia". Since I took office as president in 2009, Obama announced that it would more attention to the Asia-Pacific in the political, economic and military level. Devadason (2014) insists that China and the TPP represent a political rather than economic stance. Velk, Gong & Zuckerbrot (2015) influence that China's role in the world is essential in relation to USA. The link between East and West has to be common and equal in a spirit of dignity and mutual understanding. Bajekal (2015, p.14) indicates that the exception of China on the agreement will bring adjustments in international trade: "The US hopes Beijing that will eventually have to adopt the standards in september out by the TPP, with Obama saying:" We cannot let countries like China write the rules of the overall economy. Williams (2013) states that the TPP would allow the US to take an important part in a platform free trade in the Asia-Pacific region.

#### COMMERCIAL RELATIONS BETWEEN MEXICO AND AUSTRALIA

Australia's decision to join the TPP began in March 2010, at the beginning of relations with the US (Armstrong, 2011). Since the establishment of diplomatic relations on March 14, 1966, Mexico and Australia have developed a close relationship. The Embassy of Mexico in Australia was established in 1966. Mexico and Australia strengthen their trade relations as members of the Mechanism for Asia-Pacific (APEC) Economic Cooperation, the Agreement for the Promotion and Reciprocal Protection of Investments (BIT), Group set of Experts (CGE) and the joint Commission on Trade and Investment (JTIC). Mexico is the main partner of Australia among all Latin American countries. In the last decade (2003-2013), trade between Mexico and Australia grew 240%, from 628,414 million dollars in 2003 to 1,506.423 million dollars in 2013; more than 9% annually.

Under the Agreement on Trade and Investment signed in November 1994 a bilateral Commission on Trade and Investment was established, which to date has met eight times; most recently in February 2012 in Australia, which was co-chaired by the Secretary of Economy in Mexico and the Australian Trade Minister. There are pockets of opportunity in the agricultural fields, automotive industry, high value-added manufacturing and mining, along with fields providing clean and alternative sources of energy. The main products exported by Mexico are lead minerals, motor cars and stout. The main products imported are coal, raw aluminum and titanium minerals.

According to data from the Mexican Ministry of Economy, between 2000 and 2013, the accumulated direct investment in Mexico was \$354.9 million. 60.9% of this investment went mainly toward manufacturing, 15% went toward mining, and 8.5% accounted for real estate and rental of personal and intangible assets. At the end of 2013 there were 181 logging companies with participation of Australia in its capital. The investment is mainly concentrated in the Federal District, State of Mexico and Queretaro. In Mexico, between 2000 and 2013, Australia was the fifth largest

investor in the Asia-Pacific region. In 2011, according to the Australia Bureau of Statistics, Australia's investment amounted to \$42 million. Mexican companies within the automotive, food and other industries are currently operating in Australia, making them the main Latin American investor in Australia.

#### BRUNEI-MEXICO TRADE RELATIONS

Mexico and Brunei Darussalam established formal ties on October 2, 1991. The conference on Mexico and free trade agreements (2010) indicate the leaders meeting in the framework of the Asia-Pacific Economic Cooperation (held in 2000 APEC) in Brunei. Mexico's balance of trade with Brunei has proved unfavorable to Mexico because, in recent years, before the TPP, there were no exports from our country to that sultanate. It is clear that there has not been a major trade in recent years in any way. The main products imported from Brunei in 2004 were textiles and a small piece of granite. Ooi (2015) indicates that Brunei has enhanced trade relations to work beyond the Association of Southeast Asian Nations (ASEAN) to belong to more global trade blocs. Brunei is the support of the accession of Mexico to the Asia-Pacific Forum, in which the admission of new members is decided by consensus.

#### CANADA-MEXICO TRADE RELATIONS

Trade relations between Mexico and Canada has strengthened since the signing of the North American Free Trade Agreement in 1994. Specifically, there is the Canada-Mexico Partnership that seeks to promote collaboration between the public and private sectors. It works through a series of working groups dealing with issues of trade, investment and innovation, agribusiness, housing and urban development, environment, forests, human capital development, energy and labor mobility. Canada and Mexico are the third largest trading partners of each other. Bilateral trade between Canada and Mexico was more than \$34 billion in 2014. This represents an impressive increase of over 650% in trade in goods since 1993, the year before NAFTA took effect. In 2014, Canadian direct stock investments in Mexico reached more than \$13 billion, while Mexico's direct stock investments in Canada was \$884 million. There are a significant number of Canadian companies that export to Mexico. Mexico is a priority market for Export Development Canada (EDC), which has had offices in Mexico since 2000, providing a wide range of financial services to facilitate Canadian exports to Mexico and Canada's investment in that country. Demographic and economic projections allow Mexico to conclude that trade will increase further. From January 2014 through September 2014, the value of total trade in the NAFTA region was \$839.588 million US Dollars, representing an increase of 4.5% compared to the same period last year. Within the block of North America, Mexico's trade with its partner countries increased from 30.6% of the region between January 1993 and September 1993 to 46.5% in the same period of 2014, reflecting the importance of Mexico as a partner of Canadian and US business.

In the Mexico-Canada trade flows, they decreased by 0.5%, landing at \$26.341 billion US dollars. This value represents an increase of 824% trade in the NAFTA era, which also translates into an average annual growth rate of 11.2% between 1993 and 2014, which was the highest in the region. Mexico was fifth largest export market for Canadian products (2.0% of the total), down



from US, China, UK and Japan. In value terms, sales from Canada to Mexico reached \$7.218 billion US dollars, an amount 790% higher than in 1993. Export goods of Mexico with the greatest growth were automobiles, engine parts, computers, trucks and devices for the reception, conversion and transmission or regeneration of voice, images or other data, along with switching and routing.

#### BUSINESS RELATIONS BETWEEN MEXICO AND CHILE

The strong historical relationship Mexico and Chile share is that they were both born with independence. The free trade agreement, signed by Chile and Mexico on April 17, 1998, has created a free trade zone, in which 99.7% of shipments to Mexico are fully shielded. The links between Chile and Mexico have reached a dynamic level from the Strategic Partnership Agreement (EPA) signed on 26 January 2006 and entered into force in December of that year. The Strategic Partnership Agreement includes a wide range of areas of cooperation and numerous decision-makers, making it a very useful tool to consolidate and expand bilateral ties.

#### UNITED STATES AND MEXICO TRADE RELATIONS

Trade relations with the United States are particularly important for Mexico and intensified significantly from the North American Free Trade Agreement (NAFTA). NAFTA is an agreement signed by the governments of Canada, Mexico and the US to create a trilateral trade bloc in North America. The agreement entered into force on January 1, 1994. In reference to the combined GDP of these three countries, NAFTA became the world's largest trading bloc since 2010.

The United States is by far Mexico's leading partner in merchandise trade. U.S. exports to Mexico increased rapidly since NAFTA went into effect, increasing from \$41.6 billion in 1993 to \$240.3 billion in 2014, an increase of 478% (Villarreal & Fergusson, 2015, p. 14). NAFTA links 441 million people, producing \$17 trillion worth of goods and services annually. In 2010, the US purchased more than 80% of Mexican exports.

Mexico is the third largest US trading partner after China and Canada. Bilateral trade in goods reached \$278 billion dollars in 2009 and amounted to \$362 billion in 2010. To put this in perspective, the goods and services traded between Mexico and the US in one month, equates to the amount of goods and services traded among all 27 European countries in one year.

#### MALAYSIA-MEXICO TRADE RELATIONS

In 1974 when establishing diplomatic relations with Malaysia, which formally began on March 27 of that year was estimated. Malaysia, seeking to build itself out as a sovereign state, developed a foreign policy in line with these objectives, which was reinforced since its incursion into ASEAN Velosa-Porras (2009). On November 16, 1989 Mr. Lew Sip Hon was appointed Honorary Consul of Mexico in Kuala Lumpur, who served as such until 1995. On October 31, 1991, by presidential agreement, Minister Jorge Efren Dominguez was appointed ambassador, serving

well as the first resident Ambassador of Mexico in Malaysia. Malaysia is the tenth largest trading partner of Mexico in the world and the first in Southeast Asia. According to the Ministry of Economy (2015), bilateral trade in 2010 reached \$5,386.31 usd million, with \$5,726,225,000 USD worth of Malaysian exports and \$ 110,087,000 USD worth of Mexican exports to Malaysia. This huge deficit required rectification and systematic efforts of national figures for more balanced economic leaders. Mexico imports from Malaysia include electronic integrated circuits, telecommunications equipment, storage units, printers, computers and parts, PCAs, silicon diodes, transistors, radios, wood, rubber gloves, copper pipes, clothing and footwear. Exports from Mexico include railcars, plastics, fish and seafood, cellphones, beer, tractors, medicines and medical equipment, zinc, resin, gold, fertilizers and other products.

#### MEXICO'S TRADE RELATIONS WITH NEW ZEALAND

New Zealand has a special relationship with the South Pacific and can play a key role as a partner to promote security, stability and prosperity in the region and beyond (Vaughn, 2013). Diplomatic relations between Mexico and New Zealand were established on July 19, 1973. New Zealand established its embassy in Mexico in 1983, which has been open for over three decades. The Mexican embassy was officially opened in Wellington, New Zealand on December 30, 1991. In recent years, our relationship has broadened from a focus on trade cooperation and international forums to a wide range of business, research, politics, culture and networking including the introduction of a working holiday scheme in 2008, and student and staff exchanges between our universities and polytechnics. China, Australia, the European Union, the United States and Japan are major trading partners in this country (New Zealand in Profile, 2015). New Zealand and Mexico have complementary economies with New Zealand's strength being in Mexico's agriculture and manufacturing.

#### COMMERCIAL RELATIONS BETWEEN MEXICO AND SINGAPORE

Mexico and Singapore established diplomatic relations on December 22, 1975. Singapore provides Mexico with an open window of opportunity in South-East Asia region thanks to its leading position as a financial, commercial and business center, also to be at the forefront of the development of information technology. Mexico's exports to Singapore were 658 mdd and the imports from Singapore 1.456.5 mdd. Singapore's total foreign direct investment into Mexico amounted to us\$1.16 billion at the end of 2013, with more than 40 Singapore companies established in the country and many others doing business with Mexican companies, in sectors such as: automotive and electronics (Sunningdale and Fagerdala), logistics (APL), tourism (Banyan Tree), agribusiness (Olam), furniture (Koda), textiles (Grupo Kaybee), and oil & gas (Keppel, Sembcorp, Swiber), among others<sup>2</sup>. In 2013, Mexico was Singapore's 4th largest trading partner in Latin America after Panama, Venezuela and Brazil, with bilateral trade amounting to US\$4.2 billion, an 18.1% increase from US\$3.6 billion in 2012. Singapore's total stock of FDI into Mexico amounted to

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<sup>2</sup> Information retrieved from: <http://www.iesingapore.gov.sg/Venture-Overseas/Browse-By-Market/Americas/Mexico/Country-Information>

US\$980 million (US\$1240 million) at the end of 2012, placing Singapore as Mexico's 3rd largest investor from Asia Pacific and its 19th largest foreign investor<sup>3</sup>.

#### PERU-MEXICO TRADE RELATIONS

The commercial relations between Mexico and Peru has unique features, as they are the heirs of the oldest civilizations of America and various nations, both countries share many historical, cultural, natural and religious similarities. On July 17, 2014, the President Enrique Peña Nieto and Ollanta Humala Tasso raised the level of bilateral relations with the signing of the Strategic Partnership. The document came into force on 17 July 2015, after both countries ratified it. The Strategic Partnership Agreement provides for annual meetings alternately in both countries and comprises three committees: political, economic and cooperation, at the ministerial level.

On June 14, 1937 the Government of Mexico raised to the category representation Embassy in Lima. Mexico and Peru maintained a dynamic trade relationship that has benefited from an accelerated growth over the past 10 years. Bilateral trade between Mexico and Peru has grown 533% percent in the last decade, from \$532 million USD in 2004 to \$2.836 billion USD in 2014, with a surplus balance of USD \$624 million for our country. Peru is the 5th largest trading partner of Mexico in Latin America and the Caribbean for export supply and the 4th largest partner supplier. Mexican investment in Peru totals to about \$14.540 million dollars, which places the country as the second destination for Mexican investors in Latin America. Mexico's main exports to Peru are motor vehicles including light and heavy trucks, televisions, silver ores and concentrates. Mexico products imported from Peru include natural gas, propane and natural calcium phosphates.

#### VIETNAM MEXICO TRADE RELATION

Vietnam and Mexico have signed several agreements on cooperation in various areas such as agriculture, health, culture, education, science and technology. Mexico has provided Vietnam with plant seeds, which won high performance and has helped train Vietnamese technicians in oil and gas exploration and production, mining, farming, etc. Vietnam, meanwhile, has cooperated with Mexico in the agriculture and health fields by providing plant seeds and industrial machines, sending rice cultivation experts, doctors and health experts, and establishing many centers of acupuncture effective in Mexico. Specifically for the textile sector, Vietnam has worked to have direct access to the United States, and given the business relationship of Mexico and this country, the TPP is important for tariffs paid to these trade flows, which disappeared when the TPP was applied. Better access to the US market has been a key interest for Vietnam, which would be granted exempting an earned import allowance, up to a threshold given certain US apparel imports from Vietnam from the TPP rule of origin, contingent on a specific quantity of Vietnamese US imports of certain fabrics. (Fergusson, McMinimy & Williams, 2016, p. 6).

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<sup>3</sup> "Mexico", Coordinated Direct Investment Survey, IMF. 2012.

**Table 2.** The five main products exported and imported by Mexico with TPP members

	<b>Exports</b>	<b>Imports</b>
<b>Brunei Darussalam</b>	Liquid natural gas	Oil petroleum of bituminous minerals exc. crude
	Petroleum oils and oils obtained from bituminous minerals crude	Tankers
	Vitamines and derivatives	>1000, <1500 cc engine passenger cars
	Metanol (methil alcohol)	Other residual chemicals in the chemical industry
	Formic acid, salts and esters.	>1500, <3000 cc engine passenger cars
<b>Chile</b>	<b>Exports</b>	<b>Imports</b>
	Refined copper - cathodes and sections of cathodes	Oil petroleum of bituminous minerals exc. crude
	Copper minerals	Petroleum oils and oils obtained from bituminous minerals crude
	Unrefined copper; copper anodes for electrolytic refining	>1500, <3000 cc engine passenger cars
	Other wine; grape (with alcohol): in recip. <= 2L Grapes	Issuers of radio receivers, radio-television, radio. Liquid natural gas
<b>EEUU</b>	<b>Exports</b>	<b>Imports</b>
	Oil petroleum of bituminous minerals exc. crude	Crude oils obtained from bituminous minerals
	Other monolithic integrated circuits	>1500, <3000 cc engine passenger cars
	Touring cars, motor piston engine.	Petroleum oils obtained from bituminous minerals excluding crude.
	Soybeans, whether or not broken Passenger cars with internal combustion engines	>3000 cc engine passenger cars Issuers of electrical receivers radio, telegraphy, television, radio.
<b>New Zealand</b>	<b>Exports</b>	<b>Imports</b>
	Milk powder, granules, etc. mat. gras > 1.5% sugarfree	Petroleum oils and oils obtained from bituminous minerals crude
	Butter and other fats derived from milk	Petroleum oil of bituminous minerals exc. crude
	Other wood in the rough, coniferous	>3000 cc engine passenger cars
	Meat of bovine animals, frozen; boned Milk powder, granules, mat. gras <=1.5% sugarfree	Aircraft and other aerial vehicles, unladen weight Vehicles to transport goods, diesel.
<b>Singapore</b>	<b>Exports</b>	<b>Imports</b>
	Other monolithic integrated circuits	Petroleum oils and oils obtained from bituminous minerals crude
	Petroleum oils obtained from bituminous minerals other than crude.	Other monolithic integrated circuits
	Parts and accessories of the machines of tariff heading 84.71	Crude oils obtained from bituminous minerals
	Parts of integrated circuits and microassemblies Other parts of airplanes or helicopters	Turbo tractor parts or turbo propellers Parts and accessories of machines
<b>Australia</b>	<b>Exports</b>	<b>Imports</b>
	Iron ores	Petroleum oils and oils obtained from bituminous minerals crude
	Coal; briquettes, ovoids and similar solid fuels	Oil petroleum of bituminous minerals exc. crude
	Gas oil	>1500, <3000 cc engine passenger cars
	Gold including platinum, raw and semi wrought	Automatic data processing machines and units

	Petroleum oils and oils obtained from bituminous minerals crude	Medicines
<b>Canada</b>	<b>Exports</b>	<b>Imports</b>
	Petroleum oils and oils obtained from bituminous minerals crude	>1500, <3000 cc engine passenger cars
	>1500, <3000 cc engine passenger cars	Petroleum oils and oils obtained from bituminous minerals crude
	Oil gas	Parts and accessories for tractors
	Oil petroleum of bituminous minerals exc. crude	Oil petroleum of bituminous minerals exc. crude
	Gold including platinum, raw and semi wrought	Cars for transport of goods
<b>Malaysia</b>	<b>Exports</b>	<b>Imports</b>
	Electronic integrates circuits and microassemblies	Electronic integrates circuits and microassemblies
	Gas oil	Petroleum oils and oils obtained from bituminous minerals crude
	Oil petroleum of bituminous minerals exc. crude	Diodes, transistors and similar semiconductors
	Palm oil	Parts and accessories for cars
	Automatic data processing machines	Gold including platinum, raw and semi wrought
<b>Vietnam</b>	<b>Exports</b>	<b>Imports</b>
	Transmission apparatus for radiotelephon	Electronic integrated circuits
	Aceites de petróleo o de minerales bituminosos exc. los crudos.	Electrical devices for telephone lines
	Oil petroleum of bituminous minerals exc. crude	Oil petroleum of bituminous minerals exc. crude
	Shoes with rubber soles	Sheets, steel
	Rice	Transimision appliances radio - telephony
<b>Peru</b>	<b>Exports</b>	<b>Imports</b>
	Copper ores and concentrates	Oil petroleum of bituminous minerals exc. crude
	Gold including platinum, raw and semi wrought	Motor cars
	Oil petroleum of bituminous minerals exc. crude	Transmission apparatus for radiotelephony
	Copper alloys	Automatic data processing machines and units
	Dust and pellets of fluorine	Transporting goods vehicles for

Source: World Bank: [wits.worldbank.org/countrysnapshot/es/CHL](https://wits.worldbank.org/countrysnapshot/es/CHL).

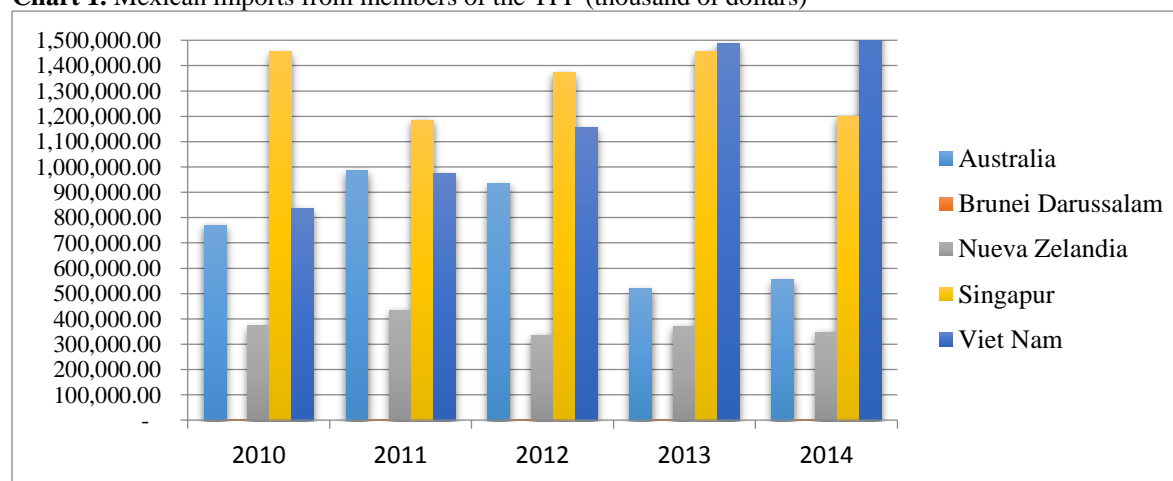
There are very few products that Mexico exchanged with TPP member countries. It is observed that the petroleum and automotive industries are those import and export operations important to the Mexican economy. Mexican trade policies require further promotion and support for other industries to diversify operations and not rely on an industry that knows how to excellently manage foreign investment by moving their plants elsewhere at any moment of crisis or when a receiving a better offer; This is good for Mexico's proximity to the United States since there is no larger market in the world.

**Table 3.** Mexican imports from members of the TPP (thousand of dollars)

	2010	2011	2012	2013	2014
Australia	770,322.65	984,190.30	934,458.08	518,147.44	553,533.70
Brunei Darussalam	89.99	42.46	8.90	171.70	31.26
Canada	9,597,528.41	9,074,708.97	8,960,327.46	9,029,966.29	9,816,453.16
Chile	1,952,329.21	2,101,388.09	1,502,612.97	1,438,431.50	1,397,604.22
EEUU	145,450,398.19	174,878,459.52	185,683,874.98	187,758,443.99	195,857,558.39
Japan	15,014,690.58	16,493,498.61	17,655,205.74	17,076,115.40	17,544,577.20
Malaysia	5,276,224.90	5,609,875.30	4,735,612.87	5,378,999.76	6,560,586.91
Nueva Zealand	373,765.92	434,740.04	335,042.64	370,700.34	348,535.41
Peru	337,135.51	582,354.45	439,972.92	585,352.66	1,106,269.18
Singapore	1,456,453.25	1,184,928.56	1,371,142.64	1,456,424.77	1,199,909.81
Vietnam	835,804.94	973,263.44	1,153,986.89	1,486,020.59	2,092,096.10

Source: Own elaboration based on [unstats.un.org/unsd/trade/data/tables.asp](http://unstats.un.org/unsd/trade/data/tables.asp)

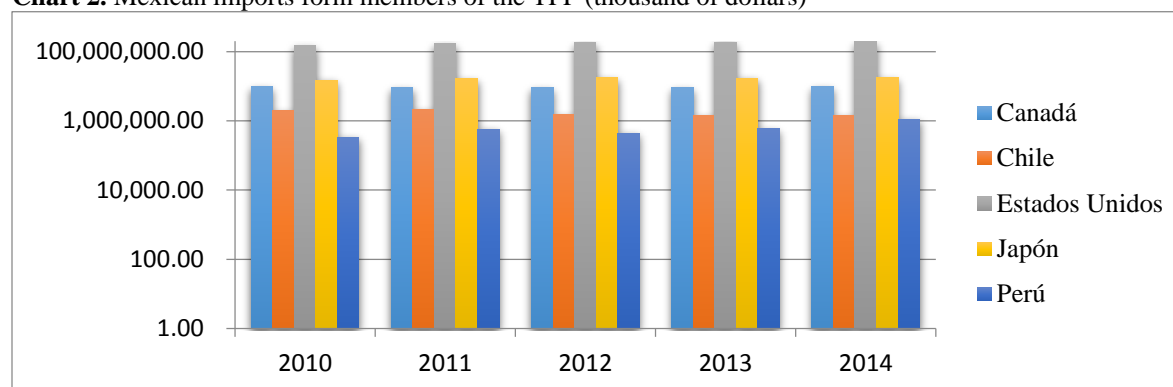
**Chart 1.** Mexican imports from members of the TPP (thousand of dollars)



Source: Own elaboration based on [unstats.un.org/unsd/trade/data/tables.asp](http://unstats.un.org/unsd/trade/data/tables.asp)

Data with the exception of countries that have commercial agreements with Mexico

**Chart 2.** Mexican imports form members of the TPP (thousand of dollars)



Source: Own elaboration based on [unstats.un.org/unsd/trade/data/tables.asp](http://unstats.un.org/unsd/trade/data/tables.asp)  
Data with the countries that currently have commercial agreements with Mexico.

**Table 4.** Exports Mexico to the TPP members (thousand of usd dollars)

	2010	2011	2012	2013	2014
Australia	657,150.49	894,570.56	1,086,319.66	988,141.05	1,009,297.83
Brunei Darussalam	354.91	528.81	4,502.15	5,029.65	2,564.37
Canada	10,663,920.46	10,676,128.20	10,927,228.61	10,415,186.03	10,670,057.78
Chile	1,863,450.58	2,072,033.57	2,251,513.61	2,084,671.63	2,147,995.26
EEUU	238,858,911.63	274,991,999.71	288,178,653.63	299,845,622.41	319,205,471.80
Japan	1,923,189.95	2,256,841.68	2,610,660.59	2,244,038.57	2,609,232.75
Malaysia	109,975.89	124,336.29	202,820.39	175,915.09	195,396.68
New Zealand	58,422.18	91,944.24	102,365.58	111,640.73	99,091.06
Peru	973,594.35	1,286,370.85	1,527,651.05	1,770,495.79	1,730,178.15
Singapore	657,459.11	591,171.01	723,662.15	576,781.17	529,071.55
Vietnam	79,791.44	64,168.33	84,243.09	105,330.77	173,051.95

Source: own elaboration based on [unstats.un.org/unsd/trade/data/tables.asp](http://unstats.un.org/unsd/trade/data/tables.asp)

Mexican exportations are mainly destined to the United States, Japan and Canada. It can be inferred that after signing the TPP, the Asian partners will be able to get benefits from the experience and the market opening that Mexico has reached with Canada and US primarily.

On the other hand, the inclusion in the TPP is to open the door to competition from Asian manufacturing countries with very good performance in manpower and technology to achieve high

levels of efficiency and low cost development. They are countries receiving welcomed foreign investment, which also represents competition.

**Table 5.** Total imports and exports by regions and countries or areas

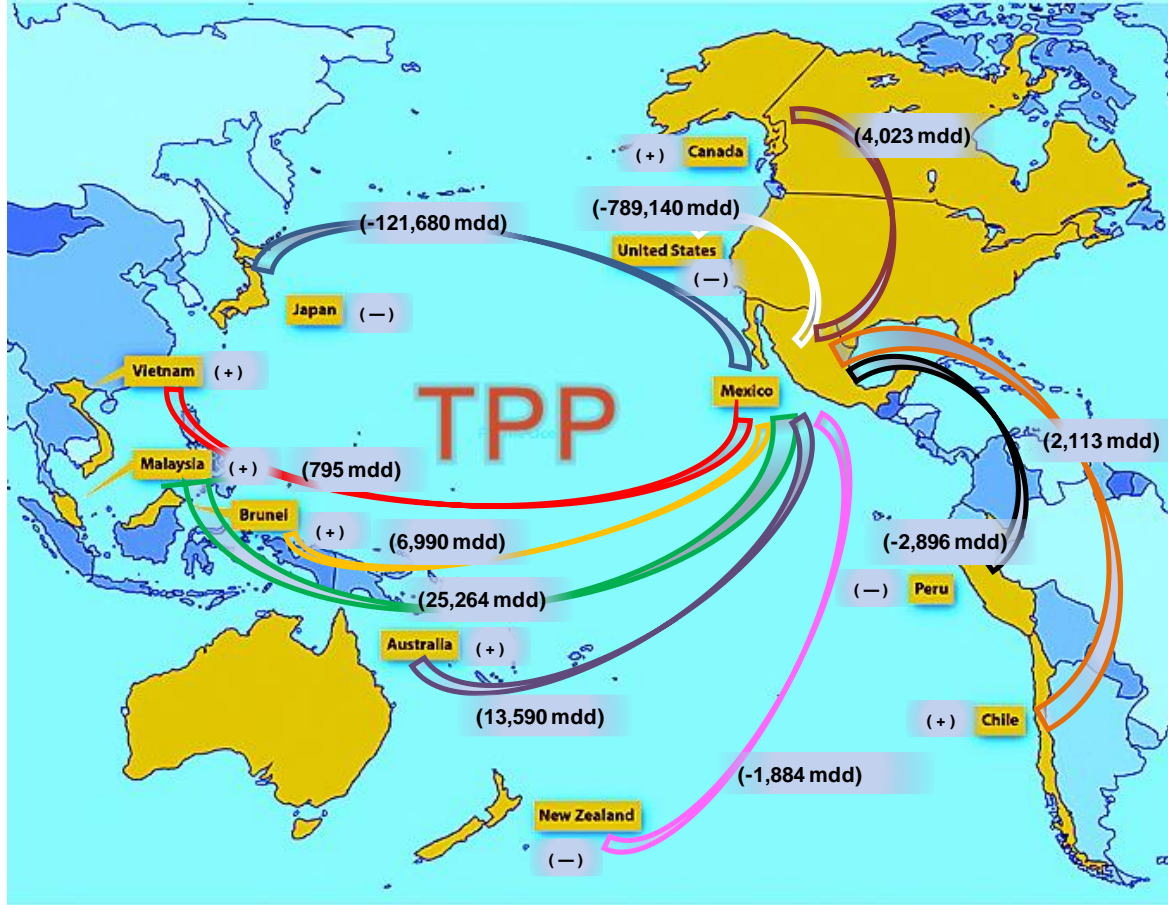
Imports CIF, exports FOB and balance: million U.S. dollars					
	2010	2011	2012	2013	2014
Australia	19,135.83	37,375.77	6,114.71	20,384.63	13,590.20
Japan	77,337.46	-31,533.63	-86,988.91	-117,810.98	-121,680.59
Nueva Zealand	465.91	137.62	-435.19	720.22	-1,884.27
Canada	-4,637.94	885.73	-7,589.94	-3,527.96	4,023.40
United States	-690,690.00	-785,600.00	-790,810.00	-750,010.00	-789,140.00
Chile	11,068.10	6,482.40	631.50	-2,566.40	2,113.40
México	-3,344.00	-1,287.00	143.00	-1,095.00	-2,319.00
Peru	6,747.30	9,005.30	4,510.40	-715.40	-2,896.50
Brunei Darussalam	6,369.09	8,855.34	9,418.25	7,834.73	6,990.40
Malaysia	33,989.82	40,613.08	31,145.08	22,433.73	25,264.70
Singapore	41,076.10	43,733.05	28,669.95	37,234.08	43,521.65
Vietnam	-12,121.10	-9,523.00	357.00	1,218.00	795.00

Source: own elaboration based on [unstats.un.org/unsd/trade/data/tables.asp](http://unstats.un.org/unsd/trade/data/tables.asp)

The major importers of TPP are the countries to which Mexico exports: United States, Canada and Japan. Exporting countries like Malaysia, Vietnam and Singapore represent the largest international competition for Mexico. The following map shows the balances of trade of countries in the TPPA.



**Figure 1.** Total imports and exports by region and countries of TPP Members



Source: Own elaboration based on [unstats.un.org/unsd/trade/data/tables.asp](http://unstats.un.org/unsd/trade/data/tables.asp)

## CONCLUSIONS AND FUTURE WORK

Economic integration brings benefits when tariff preferences are granted to member countries. Economic benefits from removing non-tariff barriers would be quite sizable, especially in countries like Australia and Mexico. Relatively small tariff cuts even produce significant increases in productivity in the long run. (Baccini, 2015, p.1).

The impulse to the micro, small and medium Mexican industry is crucial for success in the TPP. The Mexican government should provide effective strategies to support small businesses. SMEs should work on innovation and leverage that has access to larger markets. There is an opportunity to export to countries such as Japan, Australia and New Zealand since block TPP have a high purchasing power. Older Mexico trade relations were established with the US, Canada and Chile, which have to review the strengths in production of Vietnam, Malaysia and Singapore mainly. They are countries with an important labor force engaged in the industrial sector, have salaries on the rise, high literacy rates and an education system that is increasingly strengthened. However, they still have relatively low costs compared to Mexico. These can be formidable as they have strategies to export its strong influence of foreign investment competitors.

The TPP would reduce the 98% tax rate on food such as sugar, rice, meat and dairy products, which would result in cheaper products. The equalization of wages is also a challenge as Singapore, Malaysia and Vietnam are the countries with the lowest wages in the region. An equally important issue is the training and preparation of entrepreneurial talent to understand all the economic aspects including culture, language, traditions and values that meet the trends of all governments. Caballero (2014) states that in the distribution of global power, Latin America has a leading role as Mexico, Peru and Chile are sitting at the negotiating table of the TPP, but we have seen that their interests are not even. Moreover, from the perspective of another great Latin American country such as Brazil, if possible they should create spaces that counteract by first stimulating the definitive agreement in Mercosur-EU negotiations. These countries may also be the lead to the US's success in achieving mega blocks, but it is also a risk of increased competitiveness. The South American economies, have their main focus placed on China and other Asian economies and, in general, could be adversely affected by a TPP to divert international trade to other areas. For much of Latin America, the key international actor in the economic and trade dimension are no longer the US but in China. Given that China has become the largest trading partner of nearly all South American countries (and if not, ranks second), its influence and relevance in the region is significant and growing.

Identifying individual sectors, a flash point in the dairy sector would be that Canada protects its market in the TPP negotiations. In contrast to Mexico, who granted quotas, this would cause an increase in imports of the member countries, which would likely lead to a decrease of up to 30% in milk prices. The figures analyzed show that at an early stage, Mexico will enter with 500 million additional liters of milk import quota and up to 400 million liters for Australia and New Zealand, which will result in an additional billion liters for the year 15 force. Armstrong (2011) states that to reduce the risk of the TPP's becoming an exclusive club that is inward-looking and that damages the overall trading system, it should have phase-out periods for preferences that deliver eventual equal treatment of non-members. The goal needs to be re-phrased, not in terms of market access in foreign countries, but in terms of further expanding economies at home, increasing competition in services, opening up to investment, and reforming domestic regulatory processes in order to make markets more efficient and contestable. The main gains from trade eat from what is done domestically. Asia should be investing in domestic reforms at the same time as reinventing the WTO for the 21st Century so that it promotes the positive elements of the TPP multilaterally.

A line for future researchs will address the issue of the automotive sector due to the Mexico's comparative advantage. Mexico produced 3 million vehicles in 2013, ranking 8th globally as a vehicle manufacture, is the 4th largest exporter of light (passenger) vehicles worldwide, and in 2013 overtook Japan as the main light vehicle exporter to the US. A sample to the quality of the automotive manufacturing industry is evident in the growth of automotive industry. In the first half of 2014, Mexico's car production hit 1.6 million, overtaking Brazil narrowly with an output of 1.57 million, to become the region's largest car producer. This is an area of opportunity that the TPP countries can explore.

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# **Anticipating the Consequences of January 20, 2017: The Future of U.S Trade Strategy with Western Hemisphere Partners**

CHRISTINA ZANETTE<sup>1</sup>  
*Deloitte Tax LLP*  
*McLean, Virginia, USA*

*This presentation topic or research paper will examine the potential upheaval of U.S. trade priorities and strategy upon the upcoming presidential election in January 2017, with specific focus on the impact of a potential administration change of shift in priorities and the impact to export-focused businesses. The topics covered will include: the future of U.S. - Cuba relations and the evolving opportunities for businesses within the Cuban market; evolving priorities for free trade agreements in light of TPP backlash, and trade priorities and considerations in light of the U.S. /Iran nuclear accord.*

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<sup>1</sup> Address correspondence to Christina Zanette, Manager, Export Controls, Customs & Global Trade, Deloitte Tax LLP, 7900 Tysons One Place, Ste. 800, McLean, Virginia 22102, USA. E-mail: [czanette@deloitte.com](mailto:czanette@deloitte.com)

# **Desarrollo regional mediante los Grupos Beta, los oficiales de protección a la infancia (OPIS), y la salvaguarda a los menores**

GABRIELA ORTEGA CERVANTES  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

SILVIA PATRICIA MUÑOZ CASTELLANOS<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

VÍCTOR MANUEL MUÑOZ BRANDI  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*Los “Grupos Beta” ofrecen ayuda a migrantes en riesgo, pertenecen al Instituto Nacional de Migración de México. Iniciaron en 1990,*

*Los “Oficiales de Protección a la Infancia” (OPIS) son agentes federales de migración mexicana, cuya principal tarea es asegurar el respeto a los derechos humanos de los niños y adolescentes migrantes, especialmente niños no acompañados por un adulto.*

*La salvaguarda a los menores: La "Ley General para la Protección de Niñas, Niños y Adolescentes" fue promulgada el 4 de diciembre de 2014, este instrumento legal define objetivos, estrategias y políticas para atender y proteger a los menores de edad.*

*The "Grupos Beta" offers aid to migrants at risk and work under the orders of the National Migration Institute of Mexico. They were created in 1990 and its primary role is to protect the human rights of migrants;*

*The "Official Child Protection" (OPIS) are federal agents for Mexican migration, whose main task is to ensure the respect of the human rights for migrant children and adolescents, especially those children unaccompanied by an adult.*

*Safeguarding minors: The "General Law for the Protection of Children and Adolescents" was decreed on December 4, 2014; this legal instrument defines objectives, strategies and policies to assist and protect minors.*

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<sup>1</sup> Address correspondence to Silvia Patricia Munoz Castellanos, MBA Facultad de Comercio, Administración y C. Sociales, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. E-mail: [patym@uat.edu.mx](mailto:patym@uat.edu.mx)

## INTRODUCCIÓN

La frontera norte de México colinda con Estados Unidos de América; mide 3,152 km y es la frontera más transitada del mundo. Entre finales de la primera y principios de la segunda década del siglo XXI, alrededor de 150,000 mexicanos cruzaron anualmente-sin documentos migratorios-, a frontera con Estados Unidos. Los mexicanos residentes en Estados Unidos de América, representan más del 30% de la población migrante total en Estados Unidos.

En la frontera sur de la república mexicana, los Estados por donde se internan el mayor número de migrantes centroamericanos son Campeche, Chiapas, Quintana Roo y Tabasco, ingresando anualmente por esta frontera aproximadamente 171,000 migrantes, principalmente por Chiapas, para llegar a Estados Unidos de América como país de destino.

En el año 2015, el gobierno de México retornó, en promedio, a 221 mujeres migrantes por día; el 78 de las detenidas en el año fueron devueltas a su país de origen de las cuales el 11% eran niñas menores de edad (de 6 a 11 años de edad) no acompañadas por algún adulto.

Los Grupos Beta iniciaron a operar en 1990 y su papel primario es el proteger los Derechos Humanos de los migrantes; su lema: “vocación, humanismo y lealtad”. Proveen primeros auxilios, servicios sociales, acceso a refugio, búsqueda, rescate, agua, servicios de rescate aéreo, y transportación para llevar a los migrantes de regreso a casa. Los veintiún Grupos Beta operan en los Estados de Baja California, Chiapas, Chihuahua, Coahuila, Oaxaca, Sonora, Tabasco, Tamaulipas, y Veracruz

La figura de los OPIS es resultado del Modelo de Protección a Niños, Niñas y Adolescentes Migrantes no Acompañados, que implementó el Instituto Nacional de Migración en 2007.

Fue en el marco de la Mesa de Diálogo Interinstitucional sobre Niños, Niñas y Adolescentes no Acompañados (NNA) y Mujeres Migrantes, se instauró un Modelo para la Protección de Derechos de los NNA Migrantes y Repatriados No Acompañados, en el que se contempló la creación de los “Oficiales de Protección a la Infancia (OPIS).

De acuerdo con este modelo, la misión de los OPIS es detectar y atender de manera personalizada las necesidades de los niños migrantes, mexicanos y extranjeros, en el proceso de aseguramiento y protección, en las estaciones migratorias. También atienden a los niños mexicanos repatriados desde Estados Unidos.

Con base en la Ley General para la Protección de Niñas, Niños y Adolescentes" expresada en el Resumen, se constituirá el Programa Nacional de Protección a Niñas, Niños y Adolescentes que garantice el bienestar de la infancia, y el Sistema Nacional de Protección Integral, para dar seguimiento a las políticas en la materia y colaborar entre distintos órdenes de gobierno.



## LOS GRUPOS BETA:

En 1990 inició el Estado de Baja California un programa a cargo del Instituto Nacional de Migración, con el objetivo de combatir la delincuencia contra migrantes en su tránsito por territorio mexicano, y haciéndose necesario proteger a los migrantes de otros riesgos, como situaciones de grave necesidad, protegiendo la vida de los migrantes, instituyéndose los Grupos Beta en el país, y sub-oficinas en regiones que han necesitado proveer servicios a migrantes.

En el año 2000 el Reglamento de la Ley General de Población concedió a la Secretaría de Gobernación, mediante el Instituto Nacional de Migración, facultades para cooperar y coordinar con Municipios y Estados con estos grupos humanitarios no armados, recibiendo diferentes nombres en las distintas regiones, como Grupo Ébano en Matamoros, Tamaulipas, y en todas ellas como Grupos de Protección a Migrantes.

El artículo 71 de la Ley de Migración establece que los Grupos de Protección a Migrantes tienen como objetivo proteger y defender los derechos de los migrantes, independientemente de su nacionalidad o situación migratoria.

Estos Grupos operan durante todo el año y resguardan la integridad física y la vida de los migrantes, operando especialmente durante temperaturas extremas y durante catástrofes naturales, y están distribuidos principalmente en los Estados por los cuales pasan los trenes de carga utilizados por los migrantes en tránsito hacia los Estados Unidos de América. Efectúan patrullajes para detectar migrantes en situación de riesgo, y se componen de profesionales y técnicos, como médicos, enfermeros, paramédicos, técnicos en urgencias médicas, especialistas en rescate, primeros auxilios, protección civil o afines.

El personal cuenta con conocimientos básicos en Derechos Humanos y gestión migratoria, brindan asesoría legal y asisten a víctimas de ahogamiento e insolación, les informan sobre los riesgos que enfrentan al transitar el territorio mexicano y al cruzar a Estados Unidos de América, les dan a conocer sus derechos para prevenir abusos en su contra; buscan, rescatan y auxilian a migrantes extraviados o en riesgo.

Reciben y canalizan quejas y denuncias ante las instancias correspondientes, y realizan patrullajes preventivos; instalan letreros de prevención de riesgos, avisando sobre las temperaturas extremas y el peligro representado por algunos animales. Al existir desorientación y extravío, localizan, rescatan y auxilian a migrantes que se hallen en esta situación.

Para sus labores cotidianas utilizan el siguiente equipo: vehículos 4x4, camionetas pick-ups, cuatrimotos, lanchas con motor fuera de borda, remolques, ambulancias, balsas inflables; para rescate acuático utilizan chalecos salvavidas, trajes de buceo y cuerdas, y para rescate terrestre emplean camillas, kits de primeros auxilios, cuerdas, GPS y equipo de navegación terrestre y equipo para rappel.

En la frontera sur, los casos más frecuentes son heridas o mutilaciones por accidentes con los trenes en los que se transportan los migrantes, auxiliándolos, canalizándolos o trasladándolos a hospitales, o centros de salud o albergues.

Las condiciones como fracturas, torceduras, ámpulas, amputaciones, esguinces, luxaciones, heridas causadas por caídas, accidentes o asaltos, deshidrataciones, golpes de calor y quemaduras en la piel e hipotermia.

En el periodo de enero a diciembre de 2010, los Grupos Beta realizaron 15,172 patrullajes, rescataron a 4,163 migrantes, brindaron primeros auxilios a 791 migrantes lesionados o heridos, localizaron a 190 personas reportadas como extraviadas y asistieron socialmente a 186, 628 migrantes.

Los Grupos Beta construyen alianzas y vinculación con los distintos niveles de gobierno para obtener los recursos técnicos y materiales para la protección y defensa de la vida y de los Derechos Humanos de los migrantes.

Los Grupos apoyan a quienes quieran denunciar abusos, pero en su mayoría los migrantes prefieren no hacerlo debido a la inversión de tiempo que implica esta acción y a la desconfianza en las autoridades.

Los Grupos Beta son renuentes a recibir y canalizar quejas para evitarse problemas con integrantes del Instituto Nacional de Migración (INM) y de otras dependencias. La relación de mutua dependencia, producto de su pertenencia a la misma institución, mina el levantamiento de quejas y la atención a migrantes.

El desempeño de los Grupos Beta depende en gran medida del compromiso personal de sus integrantes. Algunos Grupos emprenden esfuerzos por maximizar cada vez más el alcance de su labor, mientras otros no hacen lo que no están obligados a hacer. Enfrentan distintas dificultades: limitados recursos materiales y humanos, y la presencia de la delincuencia organizada en sus territorios de operación.

Los Grupos Beta demuestran la doble conducta en el INM y la política migratoria del Estado mexicano: el Instituto realiza acciones de control y verificación cada vez más severas para los migrantes, y por otra parte, el Estado mexicano intenta ayudarlos a través de los Grupos Beta. Estas acciones contradictorias apuntan a la necesidad de replantear las funciones del INM.

Los Grupos Beta se entienden como grupos no armados, especializados en labores de rescate, primeros auxilios, asistencia social y protección de los derechos de los migrantes; a lo largo de los años han aumentado progresivamente hasta cubrir tres zonas del país: la frontera norte, la frontera sur y la costa del Golfo.

Con la transformación de los Grupos Beta hacia un brazo humanitario se dio la necesidad de cubrir otros perfiles entre sus integrantes: personas de buena condición física, con conocimientos en medicina, capacitadas para brindar primeros auxilios, realizar rescates y ofrecer atención paramédica, especialistas en comunicación, administradores de empresas, y sociólogos.

Los agentes Beta se capacitan hasta cuatro veces por año por integrante, en temas como la psicología del desastre, primeros auxilios, rescate; la capacitación que se recibe es constante y muy adecuada.

Los Grupos Beta están facultados para realizar labores de orientación, búsqueda y rescate, asistencia social y humanitaria, así como asistencia legal y recepción de quejas. Se concentran en la orientación, los rescates y la asistencia humanitaria.

El desempeño de los Grupos Beta depende en gran medida del compromiso personal de sus integrantes, sobre todo de los Coordinadores, y algunos llevan a cabo actividades adicionales a las que tienen que realizar, a fin de brindar un mejor servicio a los migrantes.

Aún es necesario profundizar la visión de los Grupos Beta, ya que algunos emprenden esfuerzos por maximizar cada vez más el alcance de su labor, mientras otros no hacen lo que están obligados a hacer.

Los Grupos Beta (protección al migrante) han intensificado sus patrullajes en las rutas más frecuentes de quienes van a Estados Unidos, ante la proliferación de bandas de traficantes de personas que suelen abandonar o atacar a quienes buscan cruzar.

Los agentes de los Grupos Beta atienden a víctimas de delitos -como robo, extorsión, violación y secuestro-, a su paso por zonas aisladas, donde es difícil para los migrantes pedir o recibir auxilio.

En el promedio de un año, los Grupos Beta, ubicados en la frontera norte, han rescatado a 5 mil 162 migrantes que estaban en alguna situación de riesgo en algún tramo de su viaje (cruce de ríos, montañas y desiertos), en los estados de Baja California, Sonora, Chihuahua, Coahuila y Tamaulipas.

Del total de migrantes rescatados en promedio por año, se atienden 938 personas por lesiones sufridas durante su tránsito por la frontera norte, en tanto que otros 58 se localizan después de haber sido reportados como extraviados; también se realizan 7 mil 560 patrullajes y se brinda asistencia social a 138 mil 970 migrantes.

El Instituto Nacional de Migración fortaleció el Operativo Invierno de los Grupos Beta de Protección al Migrante 2013. Lo anterior, debido a las temperaturas extremas y los riesgos que ello conlleva para quienes intentan cruzar por ríos, montañas y desiertos, hacia los Estados Unidos.

El fundamento legal para la integración de la Protección al Migrante a través de los Grupos Beta, se establece en el artículo 71 de la Ley de Migración, publicada en el Diario Oficial de la Federación el 25 de mayo de 2011. La Secretaría de Gobernación protege a los migrantes que están en el país, la que apoyará la protección y defensa de sus derechos, independientemente de su nacionalidad y situación migratoria. La Secretaría de Gobernación entrará en acuerdos de colaboración y consulta con los departamentos y agencias del gobierno federal, los Estados y los municipios, con organizaciones de la sociedad civil, o individuos, para el objetivo de participar en la instalación y operación de los grupos de protección al migrante (Grupos Beta).

Existe violencia que enfrentan los migrantes durante su tránsito en su ruta hacia los Estados Unidos de América. Miles de migrantes desde Centro América encaran abusos de los derechos humanos de parte de pandillas, secuestradores, ladrones, violadores, y enfrentan otras formas de abusos dentro del territorio mexicano.

El programa de los Grupos Beta es popular con los migrantes que viajan arriba del tren de carga, conocido como “La Bestia”, y en particular con los menores de edad y jóvenes que los acompañan. Los oficiales son una visión de bienvenida para los viajeros migrantes en la necesidad de sus servicios, encargándose el Grupo Beta de darles habitación, o informarles que no pueden continuar su viaje.

En lo que va del año, los Grupos Beta del Instituto Nacional de Migración (INM), ubicados en la frontera norte, han brindado orientación a 143 mil 651 migrantes.

En Baja California, en coordinación con autoridades estatales, el Grupo Beta, brazo humanitario del INM, puso en operación un faro terrestre conocido como “Torre Beta”, se trata de una estructura que permite orientar y auxiliar a migrantes extraviados a través de un “botón de pánico” que al ser activado, se envía una señal que es recibida por autoridades de seguridad y del Instituto Nacional de Migración.

En los estados de Chihuahua, Coahuila, Sonora y Tamaulipas, la colaboración entre los tres niveles de gobierno y la sociedad civil ha permitido implementar operativos conjuntos como “Operación Salvavidas” a través del cual se dota de ropa invernal, comida y auxilio médico, así como orientación a los migrantes que lo requieren. A través del “Operativo Espejo”, autoridades mexicanas y estadounidenses realizan recorridos por la zona fronteriza a fin de detectar a migrantes en situación de riesgo.

Entre las áreas de mayor peligro para los migrantes en esta temporada invernal, se encuentran La Rumorosa, Baja California; los desiertos de Altar y El Sásabe, en Sonora o El Porvenir y Ojinaga en Chihuahua, entre otras.

Para cumplir con su labor, los elementos de este cuerpo especializado reciben capacitación permanente en materia de derechos humanos, aspectos básicos de Trata e identificación de víctimas, y actualización en procedimientos jurídicos.

También reciben cursos de primeros auxilios, búsqueda y rescate -acuático y terrestre-, defensa personal y rapel, manejo de crisis y estrés, acondicionamiento físico, así como en el uso de geo localizadores, informó el INM.

En el estado de Baja California se crea un programa piloto, que más tarde integraría el Grupo Beta Tijuana, con el objetivo de combatir la delincuencia y los crímenes cometidos en contra de los migrantes en su tránsito por territorio mexicano.

En 1994 se forma el Grupo Beta Nogales, en Sonora; en 1995 se crean dos grupos más: uno en Tecate, en Baja California y el segundo en Matamoros, Tamaulipas.

Actualmente existen 22 Grupos Beta, conformados por integrantes de los tres niveles de gobierno, que efectúan su labor en 9 estados del país: Baja California, Sonora, Chihuahua, Coahuila, Tamaulipas, Veracruz, Tabasco, Chiapas y Oaxaca.

## LOS OFICIALES DE PROTECCIÓN A LA INFANCIA (OPIS)

Los OPIS son Agentes Federales de Migración dedicados a garantizar el respeto a los derechos de los NNA migrantes, en especial a los no acompañados. Actualmente, el INM cuenta con presencia de OPIS en las 32 Delegaciones Federales. Los OPIS son seleccionados de acuerdo con un perfil diseñado por el Sistema Nacional para el Desarrollo Integral de la Familia (SNDIF).

Sus principales funciones son:

Salvaguardar la integridad física y mental de los menores, brindarles de manera inmediata los servicios básicos de salud, alimento, vestido y descanso, facilitarles el contacto con sus familiares a través de llamadas telefónicas gratuitas, mantener informado al menor sobre su situación migratoria, utilizando lenguaje amable y acorde con su edad, acompañarlos durante su proceso de repatriación.

Procedimiento para la Atención, Protección y Canalización de Niños, Niñas y Adolescentes Migrantes No Acompañados:

El INM cuenta con dos procedimientos diferenciados para la atención de los niños, niñas y adolescentes (NNA) migrantes no acompañados, uno enfocado a los mexicanos y otro a los extranjeros.

Sustento Legal: El artículo 112 de la Ley de Migración establece que cuando alguna niña, niño o adolescente migrante no acompañado sea puesto a disposición del INM, quedará bajo la responsabilidad de los OPIS, para garantizar el respeto a sus derechos humanos, y se le canalizará de inmediato al Sistema Nacional para el Desarrollo Integral de la Familia o a los Sistemas Estatales del DIF y del DF, con objeto de alojarlos en instalaciones más adecuadas a su edad y necesidades, en tanto se resuelve su situación migratoria y se da aviso a las autoridades consulares de su país.

Los artículos 71, 73 de la Ley de Migración, Título Séptimo de la Protección a los Migrantes que transitan por el Territorio Nacional, Capítulo Primero del Procedimiento para la Valoración y Determinación del Interés Superior de Niñas, Niños y Adolescentes Migrantes Extranjeros no Acompañados (artículos, 169, 170, 171, 172, 173, 174, 175, 176, 177) del Reglamento de la Ley de Migración, otorga sustento jurídico a las funciones del cuerpo de Oficiales de Protección a la Infancia (OPI) y en el Acuerdo por el que se emiten los Lineamientos en materia de Protección a Migrantes del INM (artículos, 13, 14, 15, 16, 17 y 18).

Los OPIS reciben capacitación continua, especializada e integral, impartida por el SNDIF, OIM, COMAR, UNICEF, ACNUR, CIJ, INMUJERES y CONAPRED en temas como:

Derechos humanos, alfabetización emocional, métodos para comunicación de manera efectiva con niños, niñas y adolescentes migrantes, protección internacional (Asilo y Refugio), atención en crisis, violencia, maltrato y abuso, trata y tráfico de personas, equidad de género, el principio de

unidad familiar, la protección y asistencia social, acceso a la justicia, proceso migratorio, y no discriminación.

Durante abril, mayo y junio de 2012 se capacitó a la 5ª Generación de OPIS, integrada por 219 aspirantes; del 28 de abril al 09 de mayo de 2014 se llevó a cabo la capacitación de 58 Agentes Federales de Migración aspirantes a OPIS para la Séptima Generación de las siguientes Delegaciones Federales: Baja California, Chiapas, Chihuahua, Coahuila, Durango, Jalisco, Oaxaca, Querétaro, San Luis Potosí, Sonora, Tamaulipas, Tlaxcala y Veracruz.

Acciones a nivel regional:

Lineamientos Regionales para la Atención de Niños, Niñas y Adolescentes No Acompañados en Casos de Repatriación (julio 2009, impulsados por México en el marco de la Conferencia Regional sobre Migración (CRM)).

Lineamientos Regionales para la Protección Especial en Casos de Repatriación de Niños, Niñas y Adolescentes Víctimas de Trata de Personas (2007, impulsados por el Gobierno de México, Panamá y Belice en el marco de la CRM).

Capacitación a 419 funcionarios de Guatemala, El Salvador, Honduras, Nicaragua y República Dominicana sobre cómo replicar el modelo OPI:

Del 11 al 15 de noviembre de 2012 en Guatemala, el INM en coordinación con la ACNUR ofrecieron una capacitación para formar replicadores del Modelo OPI, donde participaron funcionarios de Guatemala, El Salvador, Honduras, Nicaragua y República Dominicana, con la finalidad de formar replicadores del modelo OPI y con ello crear un modelo sostenible a la niñez migrante.

Acciones a nivel nacional: Convenio General de Colaboración entre el INM y el SNDIF, vigencia indefinida (firmado el 11 de junio de 2007). En el marco de dicha colaboración interinstitucional, el SNDIF inició en el 2004 la instalación de los módulos de atención para NNA migrantes y repatriados. Las acciones que se realizan en los módulos son las siguientes: 1) valoración social y psicológica, 2) se proporciona alimento y vestido, 3) revisión de su situación jurídica y 4) localización de su familia (si no se localiza a los familiares en ese mismo día, se canaliza a la Red de Albergues). Se encuentran en operación los siguientes módulos en la Frontera Norte: Tijuana, Mexicali, San Luis Río Colorado, Agua Prieta, Nogales, Ciudad Juárez, Nuevo Laredo, Piedras Negras, Acuña y Reynosa.

Asimismo, se han suscrito Convenios Específicos de Colaboración entre el INM y los DIF estatales, para la instalación de módulos de atención para los NNA migrantes extranjeros no acompañados en la Frontera Sur, en espacios compartidos en las estaciones migratorias en: Tapachula, Chiapas; Tenosique, Tabasco; Acayucan,

## LA SALVAGUARDA A LOS MENORES

La Ley General para Protección de Niñas, Niños y Adolescentes fue promulgada el día 4 de diciembre de 2014

El objeto de la Ley se establece en su artículo 1 como sigue:

- I. Reconocer a niñas, niños y adolescentes como titulares de derechos, de conformidad con los principios de universalidad, interdependencia, indivisibilidad y progresividad; en los términos que establece el artículo 1o. de la Constitución Política de los Estados Unidos Mexicanos;
- II. Garantizar el pleno ejercicio, respeto, protección y promoción de los derechos humanos de niñas, niños y adolescentes conforme a lo establecido en la Constitución Política de los Estados Unidos Mexicanos y en los tratados internacionales de los que el Estado mexicano forma parte;
- III. Crear y regular la integración, organización y funcionamiento del Sistema Nacional de Protección Integral de los Derechos de Niñas, Niños y Adolescentes, a efecto de que el Estado cumpla con su responsabilidad de garantizar la protección, prevención y restitución integrales de los derechos de niñas, niños y adolescentes que hayan sido vulnerados;
- IV. Establecer los principios rectores y criterios que orientarán la política nacional en materia de derechos de niñas, niños y adolescentes, así como las facultades, competencias, concurrencia y bases de coordinación entre la Federación, las entidades federativas, los municipios y las demarcaciones territoriales del Distrito Federal; y la actuación de los Poderes Legislativo y Judicial, y los organismos constitucionales autónomos, y
- V. Establecer las bases generales para la participación de los sectores privado y social en las acciones tendentes a garantizar la protección y el ejercicio de los derechos de niñas, niños y adolescentes, así como a prevenir su vulneración.

Así mismo, en dicha Ley se enumeran, de manera enunciativa mas no limitativa, los derechos de niñas, niños y adolescentes, como se enuncia enseguida:

- I. Derecho a la vida, a la supervivencia y al desarrollo;
- II. Derecho de prioridad;
- III. Derecho a la identidad;
- IV. Derecho a vivir en familia;
- V. Derecho a la igualdad sustantiva;
- VI. Derecho a no ser discriminado;
- VII. Derecho a vivir en condiciones de bienestar y a un sano desarrollo integral;
- VIII. Derecho a una vida libre de violencia y a la integridad personal;
- IX. Derecho a la protección de la salud y a la seguridad social;
- X. Derecho a la inclusión de niñas, niños y adolescentes con discapacidad;
- XI. Derecho a la educación;
- XII. Derecho al descanso y al esparcimiento;
- XIII. Derecho a la libertad de convicciones éticas, pensamiento, conciencia, religión y cultura;
- XIV. Derecho a la libertad de expresión y de acceso a la información;
- XV. Derecho de participación;
- XVI. Derecho de asociación y reunión;
- XVII. Derecho a la intimidad;

- XVIII. Derecho a la seguridad jurídica y al debido proceso;
- XIX. Derechos de niñas, niños y adolescentes migrantes, y
- XX. Derecho de acceso a las tecnologías de la información y comunicación, así como a los servicios de radiodifusión y telecomunicaciones, incluido el de banda ancha e Internet, en términos de lo previsto en la Ley Federal de Telecomunicaciones y Radiodifusión. Para tales efectos, el Estado establecerá condiciones de competencia efectiva en la prestación de dichos servicios.

Las autoridades federales, de las entidades federativas, municipales y de las demarcaciones territoriales del Distrito Federal, en el ámbito de sus respectivas competencias, adoptarán las medidas necesarias para garantizar estos derechos a todas las niñas, niños y adolescentes sin discriminación de ningún tipo o condición.

Por otro lado, el pasado 18 junio de 2014 entró en vigor la reforma al artículo 123 Constitucional, en donde se elevó la edad mínima de admisión del empleo de 14 a 15 años.

De acuerdo a la Organización Internacional del Trabajo (OIT), el trabajo infantil es aquella actividad económica, realizada por niñas, niños o adolescentes, por debajo de la edad mínima general de admisión al empleo especificada en cada país.

La OIT y las Naciones Unidas han alertado a México respecto al rezago en el cumplimiento de los compromisos para la protección de la infancia, como en el caso de la eliminación progresiva de todas las formas de trabajo infantil.

En México, 3.6 millones de niños, niñas y adolescentes entre los 5 y 17 años trabajan, lo cual equivale al 12.5 por ciento de la población infantil en ese mismo rango de edad.

México se ubica en la posición 56 de 197 naciones, con mayor prevalencia de trabajo infantil, donde condiciones insalubres, falta de educación y otros derechos básicos afectan a los menores.

El trámite preferente implica que la iniciativa deberá ser discutida y enriquecida por el Senado dentro de los primeros 30 días del periodo ordinario que hoy comienza.

Un futuro de paz, de respeto y de tolerancia comienza porque nuestros menores estén libres de abuso, violencia o agresiones.

Cuando los menores de esta edad se ven obligados a trabajar, se reducen sus oportunidades de desarrollo futuro, e incluso se atenta contra su seguridad y eventualmente su salud.

Los legisladores federales y locales demuestran que los acuerdos son posibles cuando se antepone el interés superior de la nación, y más cuando los esfuerzos son para atender a la niñez y a la juventud mexicana.

La Reforma Constitucional, está en sintonía con el convenio número 138 de la Organización Internacional del Trabajo (OIT) sobre la edad mínima de admisión al empleo.



Además, el Ejecutivo Federal solicitará al Senado de la República ratificar el Convenio 138 de la Organización Internacional del Trabajo, colocando así a México como un país que previene y erradica el trabajo infantil.

Lo anterior se caracteriza por tres objetivos, que priorizan el bienestar de nuestra niñez, además de incorporar ideas y planteamientos de los legisladores de todos los partidos.

El primer objetivo es definir estrategias políticas que atiendan y protejan a los menores de edad, así como un programa de protección y líneas de acción que garanticen sus derechos.

El segundo objetivo es constituir mecanismos que aseguren el respeto de los derechos de la infancia, la creación de procuradurías para protegerlos, asesorarlos y representarlos cuando se encuentren en casos de justicia penal; requerimientos básicos de infraestructura para los albergues.

En este punto también se contempla brindar derechos a los niños migrantes no acompañados, como la asistencia médica, psicológica y jurídica, así como la asistencia consular correspondiente.

El tercer objetivo es generar entornos libres de violencia, combatir el acoso y la violencia escolar, establecer mecanismos de denuncia y protocolos de atención, además de multas de hasta 3 mil veces el salario mínimo si se conoce sobre el acoso pero no se impide.

Con esta Ley se trabajará por el bienestar de la niñez mexicana. Además, se imponen obligaciones a las autoridades federales, estatales y municipales para homologar la protección de niñas, niños y adolescentes, y se regulan con mayor profundidad sus derechos.

Para asegurar el ejercicio de estos derechos, la Ley comprende tres grandes vertientes:

Primera vertiente: Define objetivos, estrategias y políticas para atender y proteger a los menores de edad.

Con este propósito la ley prevé la elaboración de un programa nacional de protección a niños y adolescentes que establezca líneas de acción para garantizar el bienestar de nuestra infancia.

Se constituye el Sistema Nacional de Protección Integral, con el objetivo de dar seguimiento a las políticas en la materia y fomentar la colaboración entre distintos órdenes de gobierno.

Segunda vertiente: Establece mecanismos para asegurar que los derechos de todos los niños sean respetados en todo momento.

Se propone la institución a nivel federal y local, de procuradurías para la protección, o facultad para asesorar y representar, a niños y adolescentes involucrados en asuntos penales y administrativos.

Incorpora requerimientos básicos para que los albergues públicos y privados cuenten con infraestructura adecuada para el alojamiento de menores, así como para brindarles servicios de calidad durante su estancia.

Reconoce nuevos derechos para los niños migrantes no acompañados: servicios de asistencia médica, psicológica y jurídica, que existan instalaciones adecuadas para su atención y que se les garantice la asistencia consular correspondiente.

Tercera vertiente: Prevé medidas para que los niños y adolescentes crezcan en entornos libres de violencia. Será un instrumento eficaz para combatir el acoso (bullying), que tanto lastima a quienes lo padecen y ofende a toda nuestra sociedad.

Contempla medidas contra este mismo acoso y la violencia escolar, estableciendo mecanismos de denuncia y protocolos para la atención de los niños afectados. Impone multas de hasta 3 mil veces el salario mínimo a los adultos que conociéndolo, no impidan cualquier tipo de abuso, acoso o agresión escolar; ello independientemente de otras responsabilidades civiles o penales en las que se pueda incurrir

Durante la actual administración pública federal, la cifra de niños que trabajan en nuestro país cayó de 3 millones 38 mil a 2.5 millones, y se ha reducido en 500 mil niños el número de éstos que lamentablemente se encuentran en condición de trabajo ilegal.

El trabajo infantil vulnera los derechos fundamentales de los niños, como el derecho a tener una familia, a la salud o al sano desarrollo; no resuelve el problema de la pobreza ni las carencias familiares, que pretenden justificar que los niños busquen una ocupación a temprana edad: estudios de la Organización Internacional del Trabajo y de la Organización de las Naciones Unidas demuestran que esa es una justificación falsa.

El trabajo infantil afecta el desempeño escolar de niños, niñas y adolescentes por el resto de su vida; es un problema social que preocupa, que indigna, pero sobre todo que convoca a la acción conjunta de todos los sectores de la sociedad.

Las reformas al artículo 123 constitucional elevan de 14 a 15 años la edad mínima para trabajar; con ello, el Estado mexicano procurará que los menores de edad no trunquen su educación básica, pues el trabajo infantil coarta el derecho a la educación de los menores, debido a la incompatibilidad de los horarios escolares con los laborales, ya que los menores, al empezar a tener un ingreso, optan por abandonar las aulas.

Desde el Ejecutivo Federal y el Legislativo se llevan a cabo acciones para erradicar el lacerante flagelo que representa el trabajo infantil, lo cual es un gran avance en la garantía de los derechos de las niñas, niños y adolescentes, pues permitirá fortalecer el marco legal que facilite la creación de políticas públicas dirigidas a la prevención y erradicación del trabajo infantil y a la protección de la población adolescente; en particular, las que permitan garantizar a esta población la protección en el trabajo y el acceso a la educación.

Con la reforma se fincan las bases para ratificar el Convenio 138 de la OIT sobre la edad mínima de admisión al empleo; el compromiso es claro, ya que con ello México tendrá más y mejores mecanismos de protección de derechos para las niñas, niños y adolescentes, cumpliendo a su vez los principios establecidos en la Convención sobre los Derechos del Niño.

Es necesario que los niños puedan dedicarse plenamente a las actividades propias de su edad, como son: el estudio, el deporte, el juego o el descanso, que contribuyen a su formación y desarrollo integral. De ahí la importancia de que los menores de 15 años no tengan actividad laboral.

## CONCLUSIONES

La creación de los Grupos de Protección al Migrante, se encuentra establecida en el artículo 71 de la Ley de Migración, publicada en el Diario Oficial de la Federación el 25 de mayo de 2011:

Artículo 188. Los grupos de protección a migrantes tendrán como objetivo proporcionar ayuda humanitaria, primeros auxilios, asistencia migratoria, orientación e información a los migrantes sobre sus derechos. Para el cumplimiento de su objetivo, estos grupos se ubicarán en zonas del territorio nacional donde estratégicamente puedan desarrollar sus funciones.

Los OPIS están presentes en las 32 delegaciones federales, y cumplen su trabajo de proteger los derechos de la niñez migrante.

En el Instituto Nacional de Migración, surgió la idea de crear un modelo con Agentes Federales especializados en la atención y cuidado de los niños; se formaliza el programa y capacitan a 78 Agentes, para conformar la 1ª generación de OPIS; el grupo de OPIS crece a 179 agentes especializados; se legaliza con marco jurídico y se publica en el Diario Oficial de la Federación.

En los últimos 20 meses se ha reducido en 500 mil el número de niños que se encuentran en condiciones de trabajo ilegal. De acuerdo con el INEGI, en 2011 se encontraban en condición de trabajo infantil 3 millones 38 mil niños, en la última encuesta son cerca de 2 millones y medio los que permanecen en esta condición.

El 27 de junio pasado se instaló la Comisión Intersecretarial para la Prevención y Erradicación del Trabajo Infantil, y la Protección a Adolescentes Trabajadores en Edad Permitida. A la fecha, se han instalado 32 comisiones locales para este fin. Asimismo, se han firmado convenios de coordinación con 12 universidades para salvaguardar la integridad de niños y niñas, y generar conocimiento sobre las causas y consecuencias del trabajo infantil.

La Secretaría de Gobernación celebrará convenios de colaboración y concertación con las dependencias y entidades de la Administración Pública Federal, de las entidades federativas o municipios, con las organizaciones de la sociedad civil o con los particulares, con el objeto de que participen en la instalación y funcionamiento de los grupos de protección a migrantes. Existe una gran desinformación sobre los aspectos que se exponen en este trabajo. Es necesario establecer mecanismos que permitan una mayor difusión para que la opinión pública conozca las necesidades y problemas de la población infantil de su territorio, “grandes olvidados de la sociedad”,

Considerando que en Nuevo Laredo, Tamaulipas, arriban doce mil migrantes cada año, es necesario establecer un Grupo Beta en esta región fronteriza Veracruz; y La Ventosa, Oaxaca. Todos los módulos son operados por el DIF.

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## Violencia de género en México: oportunidades de mejora

MARÍA DE LOURDES BESS OBERTO MERAZ<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

LIC. LUIS HERNÁN LOPE DÍAZ  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

LIC. JUAN ANTONIO HERRERA IZAGUIRRE  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*Violencia significa maltrato físico tales como golpes, empujones, patadas, etc. Las agresiones siempre han marcado a las persona que la reciben ya que las hace vulnerables.*

*El agresor no siempre tiene el mismo comportamiento ya que en público se comporta de manera adecuada y en el hogar es totalmente diferente. Podemos encontrar diferentes tipos de violencia: física, psicológica, sexual, económica y patrimonial, simbólica, domestica, institucional, obstétrica y violencia mediática. Las costumbres y la educación han sido uno de los factores que más han intervenido ocasionando que por siglos la mujer sea considera como el tan mencionado sexo débil. Para algunas culturas la mujer debe caminar atrás del esposo, otras son ejecutadas por alguna conducta que han considerado pecaminosa, la mujer debe ser una esposa fiel, callada, abnegada, madre pendiente de sus hijos y sacrificada. Cuando en realidad la mujer no solo desempeña labores del hogar sino que puede ser una gran empresaria, poetisa, una gran política o gobernar un país; tenemos grandes ejemplos de mujeres exitosas, como Sor Juana Inés de la Cruz, Doña Josefa Ortiz de Domínguez o la dama de hierro Margaret Tacher. Solo les solicito a los hombres que cuiden de la mujer no porque su su hermana, madre, novia o esposa sino porque e s un ser humano con derechos.*

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<sup>1</sup> Address correspondence to María de Lourdes Bess Oberto Meraz, Facultad de Comercio Administración y Ciencias Sociales, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México.  
E-mail: [lic.bm61@gmail.com](mailto:lic.bm61@gmail.com)

## **Pena de muerte: un delito legal injusto**

MYRIAM JANETH URIBE LOZANO<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

MTRA. MARLENE ARRIAGA HUERTA  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

MTRO. ROBERTO ARREOLA RIVERA  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*Esta investigación aborda el tema de la pena de muerte. En él se analizan los orígenes de la pena de muerte, los métodos utilizados, la corrupción en el proceso y delito, justicia, solución. En cada uno de ellos se expone la injusticia que se comete al aplicar esta pena. Por lo cual se concluye que esta pena es un delito además de ser ineficaz e ir contra los derechos humanos.*

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<sup>1</sup> Address correspondence to Myriam Janeth Uribe Lozano, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. Email: [uribe.137@hotmail.com](mailto:uribe.137@hotmail.com)

# The Certification Effect on Loan Terms

BOLORTUYA ENKHTAIVAN<sup>1</sup>  
Texas A&M International University  
Laredo, Texas, USA

*In this paper I explore the role of lead arranger's reputation on various syndicated loan terms—the yield spread, loan maturity, loan size and loan covenants. An involvement of top tier lead arranger conveys valuable information to the information disadvantaged syndicate participants about the true quality of the borrower. So called certification effect of reputable lead arrangers have been evidenced in the syndicated loan literature and benefited borrowers in reducing their credit costs. However little has been explored about certification effect beyond loan price terms. An equally interesting question for borrower would be benefits of having reputable lead arrangers in negotiating other non-price loan terms. My results support the certification effect by finding more favorable loan terms for the borrower in presence of Top 10 lead arrangers. While loan spread and financial covenants reduce, loan maturity and amounts increase. Extending the added value of certification effect with presence of borrower's reputable (Big 4) external auditors, results become even stronger. An average borrower who has a Top 10 lead arranger and a Big 4 auditor at the same time could reduce its loan price by about 37bps, number of financial covenants by about 0.2 units and increase loan amount and maturity materially by about 121.3 million USD and a year longer respectively. The results are robust to SUR estimation method after I count correlations among dependent variables and use different measures for certification. Overall, results suggest that even for top tier lenders who possess higher monitoring capacity, an independent third party certification could add informational value.*

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<sup>1</sup> Address correspondence to Bolortuya Enkhtaivan, Ph.D. Candidate, Texas A&M International University, 5201 University Blvd., Laredo, TX 78041, USA. E-mail: [bolortuya\\_enkhtaivan@dusty.tamiu.edu](mailto:bolortuya_enkhtaivan@dusty.tamiu.edu)



# Social Capital and Debt Enforcement: An International Analysis

RENÉE OYOTODE<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

ZUBAIR ALI RAJA<sup>2</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*A great deal of research has been done on the relationship between social capital and bankruptcy. However, the extant literature primarily focus on firms-level and individual-level data. Country-level analysis only focuses on bankruptcy performance in the OECD countries. In this paper, we use a unique country- level dataset provided by Djankov et al. (2006) to examine the role of social capital on the efficiency of debt enforcement around the world. This data allow the analysis to be conducted on 71 lower middle, upper-middle and high-income countries. After controlling for countries income, legal origins and other characteristics of debt enforcement, we find that debt enforcement is more efficient in countries with high social capital. The evidence suggests that in countries with high social capital; interest rate, duration and cost of bankruptcy are lower. Further, firms are more likely to be kept as going concern in these countries. This paper therefore contributes to social capital explanation of debt enforcement efficiency.*

**KEYWORDS** *Social Capital, Debt Enforcement, bankruptcy, liquidation, reorganization, legal origins*

**JEL** *G330, F340, Z130*

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<sup>1</sup> Address correspondence to Renée Oyotode, Texas A&M International University, 5201 University Boulevard, Laredo, Texas 78041, USA. Email: [reneeoyotode@dusty.tamiu.edu](mailto:reneeoyotode@dusty.tamiu.edu)

<sup>2</sup> Address correspondence to Zubair Ali Raja, Texas A&M International University, 5201 University Boulevard, Laredo, Texas 78041, USA. Email: [zubairraja@dusty.tamiu.edu](mailto:zubairraja@dusty.tamiu.edu)

# **An Alternative Approach to Opening Statements in Dispute Resolution to Reduce Priming Effects**

WADE BAGGETTE, MS, MBA, JD<sup>1</sup>  
*Southern Methodist University*  
*Dallas, Texas, USA*

*Priming effects have been noted as a problem in opening statements and other areas of mediation by mediators. Generally, the party who is first to speak has an advantage. Reviewing literature on priming, short term memory, “thought intrusion,” and brainstorming, we propose a simple technique that can either eliminate or attenuate the problem of priming in dispute resolution settings.*

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<sup>1</sup> Address correspondence to Wade Baggette MS, MBA, JD, Graduate Student in Dispute Resolution, Southern Methodist University, Dallas, Texas, USA. Email: [wbaggette@smu.edu](mailto:wbaggette@smu.edu)

## AN ALTERNATIVE APPROACH TO OPENING STATEMENTS IN DISPUTE RESOLUTION TO REDUCE PRIMING EFFECTS

The power of priming effects in word completion and picture recognition tasks is well known. (Tulvig et al 1982, Snodgrass 1990, Neely 1991) Priming has been implicated in other areas such as stereotype threat. A study of stereotype threat by Ambady et al (2001) showed that when Asian American girls had their Asian identity emphasized that the participants in that group performed better than average on a test of math skills but when another randomly assigned group of Asian American girls had their female identity emphasized that they performed worse than average on the same test of math ability. Others have confirmed these results with various replications (Cadinu, 2005; Shih, 2006; Rydell et al, 2009).

As Weitz (2010) observed, mediators are concerned with cognitive biases and effects such as priming effects and how they affect the mediation process, including opening statements. Questions regarding the mechanisms behind priming effects and how they might be neutralized are of central importance to the mediation process.

Cadinu (2005) developed a structural equation model exploring the relation of “thought intrusion” to performance. Authors specifically stated “...this model supports the hypothesis that negative math-related thought intrusions mediate the effects of stereotype threat on performance.” Could this model of stereotype threat apply more broadly to priming effects in general. We believe it could. But for thought intrusion to be a problem, limitations of short-term memory should be considered as well. Cowan (2001) explored limitations of short term memory in an update of George Miller’s original article, “The Magic Number Seven.” (1956)

The capacity of short-term memory has been described, historically, as chunks. Chunks have a perceptual quality to them and often can involve the closure of several smaller items into a gestalt of a larger “chunk.” Cowan’s followup research regarding the capacity of short-term memory described in Miller’s original research on “chunking” reduced the capacity of short term memory in terms of number of “chunks” from seven to four. (Miller, 1956) Regarding the capacity of short-term memory, the bad news from Cowan is that it is worse than we originally thought. We cannot hold a mere seven “chunks” in short-term memory; we can only hold four, given some individual variation this may range from as low as three “chunks” to as high as five. For some new piece of information to come into short-term memory for us to “process,” something must go, and most people can typically only hold four items.

We will make a bold leap and conclude, based on Cadinu’s identification of “thought listing” (or intrusion) as a mediator variable, that a powerful stimulus producing a priming effect, such as a stereotype threat (or any other threat), has the ability to overload the highly limited capacity of short-term memory described by Cowan and, therefore, debilitate performance on cognitive tasks.

At this point, you may wonder what relevance any of this has to do with mediation. (We mean “mediation” as in alternative dispute resolution and not “mediation” as in the statistical concept of a “mediator variable” that consumes variance and provides explanation in a structural equation model.)

Consider this: the party who “goes first” in providing an opening statement in a mediation has the ability to prime the other party, possibly disrupting their thought processes. This disruption of thought processes, specifically an “overflow” of short term memory, may be either intentional or unintentional. We strongly suspect that, in highly informal terms, a sufficiently inflammatory or threatening opening statement by one party can, literally, blow the thoughts out of the head of the other party. We offer this in all seriousness (with only a hint of a smile at the informal language) and without exaggeration based conclusions drawn from a combination of the research by Cadinu and by Cowan as well as personal experience in a variety of settings.

In some cases, local social or cultural conventions may determine who goes first. For example, in certain cultures, the prince provides the first opening statement and the farmer will follow, assuming that the farmer had the audacity to dare to challenge the prince in the first place. But in other jurisdictions, who “goes first” is not so clear.

A variety of solutions, imperfect solutions, abound. One is to ask the parties “who goes first.” Invariably the one with more power or social status is likely to dominate the outcome of such a decision, and this is particularly problematic in some situations such as those that involve abuse that the mediator does not know about.

Another alternative is to toss a coin. While such an approach might work well for an informal experiment involving a number of otherwise neutral participants, it can yield less than desirable results in situations in which the lives and property of parties in significant disputes are at stake.

We offer an alternative approach that, while still not perfect, has a better chance of preservation of neutrality in opening statements as well as other parts of the mediation process. That technique has been borrowed from the “brainstorming” peer-reviewed literature.

## BRAINSTORMING

We may disappoint our readers by offering the solution first. The solution is simple: after the mediator’s opening statement, have each party, in silence, write down their belief as to what is the single most important issue in this mediation. Often a single word will suffice, such as “money” or “respect.”

This solution can be easily expanded and varied in explorations of identifying the optimal approach. For example, the mediator can have the parties write down the three most important issues and then identify the single most important of the three. After opening statements, and depending on the style and approach of the mediator, the parties can be encouraged to write down additional issues so that different approaches to potential solutions may be identified. The process we describe could also be completed by parties on a form provided to them before the mediation to provide ample time to think about the issues instead of having to perform under severe time constraints.

We offer that we may have disappointed our readers because in our description of this deceptively simple process we have nearly eliminated the theory and elegance of the work of our

original source, namely the work of Girotra et al (2010). That article explored two alternative approaches to idea generation: (1) the team approach and (2) the hybrid approach. The team approach is the same as what the most casual reader would expect: a team of people discuss alternatives in an attempt to identify the “best” solution. And, in some ways, the discussions that characterize the team approach resembles the typical opening statement process used in many mediations.

The hybrid approach is nearly identical to the team approach except that the hybrid approach requires that the individual team members develop lists of ideas independently and prior to the group meeting for discussion of these same ideas and identification of the best solution. Girotra et al were interested in four variables: “(1) the average quality of ideas generated, (2) the number of ideas generated, (3) the variance in the quality of ideas generated, and (4) the ability of the group to discern the quality of the ideas.”

Girotra et al note that a number of previous studies identified that the hybrid approach generates more ideas. (cf. Robbins and Judge 2006, Paulus et al. 1996, Stroebe and Diehl 1994). But Girotra et al went further: they demonstrated that the hybrid approach generated a better quality of ideas. Our approach adapts the “hybrid” approach in idea generation into an extremely simple, but theoretically grounded, technique for use in opening statements in mediation and other alternative dispute resolution settings. By asking mediation clients to silently identify and record the single most important issue possibly along with any ideas about the most critical issues into written notes, we avoid or reduce the problem of “thought intrusion” knocking important “chunks” of information out of short-term memory. We reduce or eliminate the priming effect of opening statements. We argue that this same approach is likely to be useful in a variety of mediation settings for identification of the most relevant issues to explore in the limited time available. And, this same technique may have application to later stages of the mediation process that follow the opening statement.

## CONCLUSION

We adopt this method as a useful tool for mediators who follow certain mediation styles such as facilitative mediation or possibly evaluative mediation. And, we note that we are not merely reducing priming effects in any ordinary sense of that term. Rather, because the priming does not occur, or is at least attenuated, prior to the identification of critically important issues, we expect the quality of issue identification to be better and possibly yield a better settlement rate to result due to elimination of time spent exploring competing issues of lesser relevance.

Answering these last few questions requires empirical research, a project beyond the scope of this current paper in which we identify a technique and a possible theoretical foundation for that technique. But given ways to operationalize the “quality” of issue identification, possibly quite difficult, and the improvement in settlement rate, likely rather easy, we believe that empirical research can be conducted that would demonstrate the usefulness and desirability of the approach.

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# Modeling the Expansion of Oil Production in South Texas and Mexico

DAVID HUDGINS<sup>1</sup>

*College of Business, Texas A&M University – Corpus Christi  
Corpus Christi, Texas, USA*

JIM LEE

*College of Business, Texas A&M University – Corpus Christi  
Corpus Christi, Texas, USA*

*This study develops a dynamic output adjustment model that characterizes the expansion of U.S. oil production firms in Mexico. Using a Cobb-Douglas framework that differentiates U.S. and Mexican plants, we derive the comparative static risk-free dual-country production levels for the multinational operations in each of the two countries when there are no capital mobility constraints and perfect information. Given capital and labor adjustment constraints on Mexican production, the paper uses an optimal control framework to derive the optimal production levels over time during a fixed adjustment period. This provides a pragmatic strategy for planning a growth path for investment in foreign operations.*

**KEYWORDS**    *Continuous Time, Optimal Control, Dual Plant, International Production, Mexico, Oil, Texas*

**JEL**    *C61, D24, F15, F21, F23, R10*

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<sup>1</sup> Address correspondence to David Hudgins, Department of Decision Sciences and Economics, College of Business, OCNR 314, 6300 Ocean Drive, Texas A&M University – Corpus Christi, Corpus Christi, Texas, USA.  
E-mail: [david.hudgins@tamucc.edu](mailto:david.hudgins@tamucc.edu)

## 1. INTRODUCTION

The U.S. shale oil revolution has significantly altered the landscape of global energy markets, making the U.S. the world leader in oil production ahead of Saudi Arabia since late 2012. The advent of unconventional drilling technologies and evidence of the impact of oil production on the regional economies, particularly in Texas (Lee, 2015), have contributed to a legislative reform of Mexico's energy industry. The legislations passed in 2013 and 2014 by the Mexican government have opened up much of the energy sector to private companies as well as foreign investment (Tunstall, 2015). The historic reform in Mexico's oil and gas industry has created an opportunity for U.S. energy firms, especially those operating in the Texas shale plays, to expand oil and gas production across the U.S.-Mexico border. Against this background, the objective of our paper is to characterize the optimal strategies for this expansion under alternative scenarios.

### 1.1 Shale Oil Development in Texas

One recent development in the world energy market was a boom of shale oil production in the United States. In 2008, crude oil prices peaked above \$130 per barrel before dropping below \$40. Until oil prices became relatively stable in 2011, growth in shale oil production was relatively slow. Between 2011 and mid-2014, oil prices fluctuated between \$80 and \$100 per barrel. Meanwhile, shale oil production and the number of oil rigs in the United States grew rapidly.

Much of the shale oil production growth was driven by the Eagle Ford (EF) formation in South Texas, which is the newest shale play discovered in the United States. Oil production in the EF Shale region increased at an exponential rate from 581 barrels per day in 2008 to over 1 million barrels per day in 2014. Oil prices dropped precipitously in late-2014 and then became even more volatile. The 2015 episode of low and volatile oil prices resulted in a sharp drop in rig counts but a slow response in oil production partly due to the time lag between the initial drilling of a given well and extracting oil from it.

Motivated by empirical observations, we develop a theoretical framework calibrated with the data of major oil operators in the EF region. In section 2, we use data from the largest oil drillers in the EF region, and estimate a representative firm's total cost function in association with a Cobb-Douglas production function with fixed capital, variable labor, and variable capital inputs.

In section 3, we develop an optimal control model to derive the representative firm's optimal output growth when it is subject to capital constraints. This leads to a bang-bang control law whereby the firm's output will grow by a smaller rate than it does in the unconstrained case. Moreover, the capital constraints lead the firm to cease the production growth near the end of the planning horizon, causing the level of output to stagnate relative to the unconstrained level. As the largest oil producers follow this capital-constrained trajectory, the entire EF region's growth trend will level off, even when the expected future oil price is the same on average as that in the case with no capital constraints. Our optimal control model with capital constraints predicts growth trends in rig counts and oil output between 2010 and 2015 that were below the corresponding trends in the case of a risk-free environment.



## 1.2 Shale Oil Drilling Expansion in Mexico

Partly due to the success of the shale oil revolution on the U.S. side of its border, Mexico's Congress passed legislation in 2013 that opened the previously nationalized energy sector to domestic private investors and to foreign investors (Karp, 2015). This policy reform has allowed private and foreign firms to conduct exploration, production, refining, transportation, storage, and distribution of oil and natural gas. Hundreds of energy firms are based in Texas, including 28 *Fortune 500* companies (Karp, 2015). Karp (2015) notes that 54% of Mexico's prospective oil and gas resources are unconventional, which would require Texas firms to provide physical and human capital, as well as technology required for horizontal drilling and fracking. Since 52% Mexico's conventional reserves are in deep-water, Texas would also provide capital and technology for off-shore oil production.

Mexico's natural gas resources are one-fourth of those in the U.S. Two of the largest promising shale gas basins are on the Texas-Mexico border. The Burgos Basin in northeast Mexico is an extension of the Texas Eagle Ford Shale. That basin is estimated to hold 67% of Mexico's 545 Tcf (trillion cubic feet) of recoverable shale gas output. Karp (2015) emphasizes that the prospect for foreign energy firms' operations in Mexico is dependent on how fast Mexico develops the necessary infrastructure. The objective of this paper is to address this issue from the Texas firms' perspective.

Currently, 60% of Mexican gas imports arrive directly from Texas pipelines. Strong recent economic growth in Mexico has raised electricity demand, which has been estimated to grow about 60% over the next decade. Since electric generation has increasingly relied upon natural gas, this sustains an increasing market demand for gas production. In order to accommodate the potential expansion of the Mexican energy sector, it is estimated that Mexico requires at least 135,000 highly trained energy personnel over the next decade (Tunstall, 2015, p. 46).

In section 4, we apply current and projected data to the Cobb-Douglas production specification of a representative firm in order to model the expansion of oil production from the Mexican subsidiary of a representative South Texas oil-producing firm. We use the capital constrained model to forecast the output growth of a representative U.S. oil-producing subsidiary that operates with capital constraints in Mexico. Given that the multi-regional firm faces approximately the same global oil market price, profit maximization requires that the firm allocates its production so as to equalize the marginal costs between the South Texas and Mexican regions.

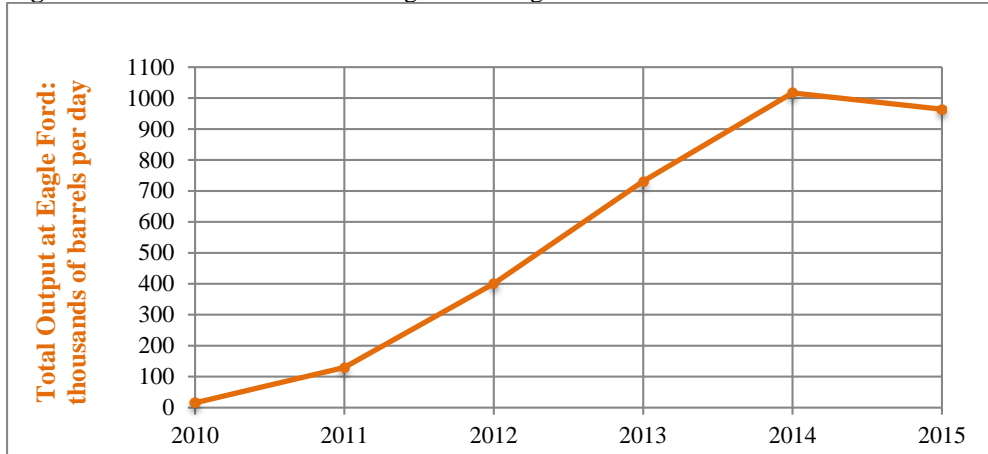
In section 5, we use the 2016 data and estimates to construct a model of a representative dual-region multinational oil producer. This model can be used to determine comparative static risk-free dual-country production levels for the multinational operations in each of the two countries at the beginning and end of a projected growth period when there are no capital mobility constraints and perfect information.

## 2. COMPARATIVE STATIC ANALYSIS FOR THE OIL PRODUCTION IN SOUTH TEXAS

### 2.1 Model Background

This subsection describes the background for our theoretical analysis. Figure 1 shows total oil production in the EF region between 2010 and 2015. The data are sourced from the Texas Railroad Commission.<sup>2</sup> The production grew rapidly from 15,000 barrels per day in 2010 to over 1 million barrels per day in 2014, before leveling off in 2015.

**Figure 1:** Total Oil Production at Eagle Ford Region for All Producers



**Figure 2:** Oil Price

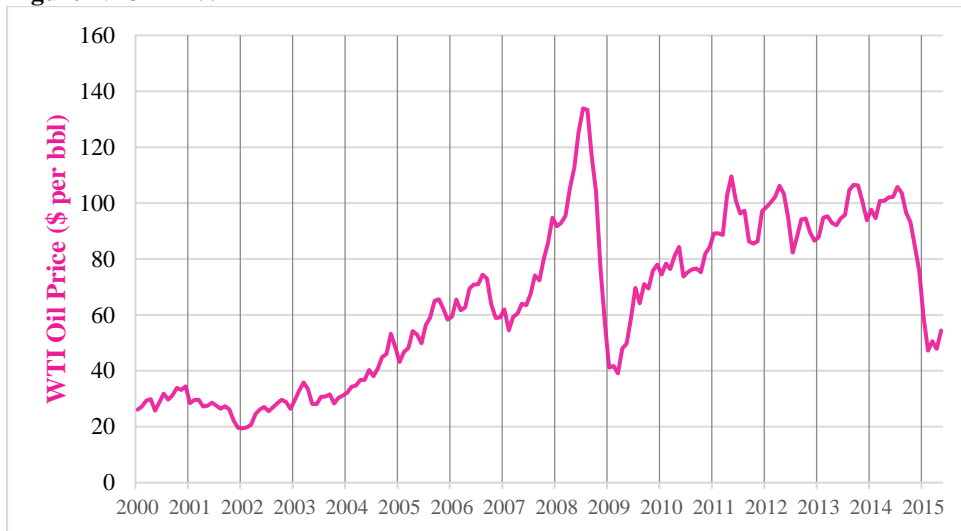


Figure 2 shows the WTI oil price data from 2000 to 2015. In the five years leading to the Great Recession of 2007-2009, the oil price rose gradually from below \$40 to nearly \$80 per barrel. The price between 2000 and 2007 averaged at \$60. During the Great Recession period, changes in the

<sup>2</sup> See [http://www.rrc.state.tx.us/media/25822/eaglefordproduction\\_oil\\_2008\\_102014\\_day.pdf](http://www.rrc.state.tx.us/media/25822/eaglefordproduction_oil_2008_102014_day.pdf).

U.S. and world economies brought dramatic swings in crude oil prices. From 2010 through mid-2014, the WTI price fluctuated between \$80 and \$100 per barrel, before declining to about \$50.

Based on the observations of oil prices in periods before and after the Great Recession, our analysis assumes that a representative oil driller initially faced an average price of \$60 per barrel before 2010, but expected to receive an average price of \$80 per barrel after 2010.<sup>3</sup> However, firms seeking to expand production due to the higher expected average oil price of \$80 per barrel would have encountered some capital constraints, which would have limited the rate of expansion. As illustrated below, firms operating constraints will not commit the full amount of capital resources as they would in that absence of input limitations.

## 2.2 Production and Cost Functions of a Representative Firm

The model considers a U.S. parent firm that divides its production facilities between the South Texas EF play and its extension into Mexico. The facilities in the U.S. are aggregated so that the firm considers the total South Texas production as plant 1, and the Mexican (aggregated foreign) production as plant 2. In light of empirical data as presented below, the technology is specified as being characterized by a Cobb-Douglas production function, where U.S. production has a relatively larger share of variable operational costs, and is more labor intensive. Mexican production has a larger share of capital costs, so that it is relatively intensive in the capital inputs. Tintner et al. (1977) discusses the issues of factor aggregation and technical change in Cobb-Douglas production functions, and using Austrian data, finds empirical evidence that the Cobb-Douglas functional form is appropriate for various types of energy production. The firm's production function for the EF region can be illustrated by first defining the following variables:

- $y$  = Output, in thousands of barrels of oil per day (MBbld)
- $F$  = Fixed daily Capital
- $K$  = Variable daily Capital
- $L$  = Variable daily Labor
- $a$  = Technical Coefficient

The production process is assumed to be approximated by the Cobb-Douglas function:

$$y = f(L, K) = AL^c K^d \quad A = aF^h \quad A, h, c, d > 0; c + d < 1 \quad (1)$$

In a competitive output market, the firm faces the price ( $P$ ) of oil per barrel set by the market. The cost variables are defined as follows:

- $P$  = Price of oil, in dollars per barrel
- $z$  = daily rental rate on fixed capital
- $w$  = daily cost of labor

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<sup>3</sup> The price of \$80 per barrel is consistent with the predictions of the oil industry. At its April 8, 2015, investor meeting, *ConocoPhillips* (2015) stated that it expected a more volatile price, and provided a WTI price range that centered around \$80 per barrel throughout 2016 and 2017.

$r$  = daily rental rate on variable capital  
 $C$  = Total daily costs  
 $FC$  = daily fixed costs  
 $VC$  = daily variable costs  
 $MC$  = marginal cost

The firm's total daily production cost is given by equation (6) as

$$C = zF + wL + rK = FC + wL + rK \quad (2)$$

To maximize profits, the competitive firm chooses the level of output ( $y$ ) where  $P = MC$ . Once output is chosen, the firm will select the cost-minimizing levels of labor and variable capital that solve the constrained optimization problem, which minimizes  $C$  in equation (2) subject to equation (1).<sup>4</sup> The cost-minimizing levels of labor and variable capital can be written, respectively, as follows:

$$L = L(w, r, y) = \left(\frac{c}{d}\right)^{\frac{d}{c+d}} w^{-\frac{d}{c+d}} r^{\frac{d}{c+d}} \left(\frac{y}{A}\right)^{\frac{1}{c+d}} \quad (3)$$

$$K = K(w, r, y) = \left(\frac{c}{d}\right)^{\frac{-c}{c+d}} w^{\frac{c}{c+d}} r^{-\frac{c}{c+d}} \left(\frac{y}{A}\right)^{\frac{1}{c+d}} \quad (4)$$

The total variable cost is therefore:

$$VC = v y^{\frac{1}{c+d}} \quad (5)$$

where

$$v = \left[ \left(\frac{c}{d}\right)^{\frac{d}{c+d}} + \left(\frac{c}{d}\right)^{\frac{-c}{c+d}} \right] L^{\frac{c}{c+d}} K^{\frac{d}{c+d}} \left(\frac{1}{A}\right)^{\frac{1}{c+d}} \quad (6)$$

The firm's total cost ( $C$ ), marginal cost ( $MC$ ), average total cost ( $AC$ ), average fixed cost ( $AFC$ ) and average variable cost ( $AVC$ ) are given, respectively, by equations (7) – (11).

$$C = FC + v y^{\frac{1}{c+d}} \quad (7)$$

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<sup>4</sup> For simplicity, we assume all inputs affect output within a given period, which seems reasonable for the annual frequency that the model represents.

$$MC = \frac{dC}{dy} = \left( \frac{1}{c+d} \right) v y^{\frac{1}{c+d} - 1} \quad (8)$$

$$AC = \frac{C}{y} = \frac{FC}{y} + v y^{\frac{1}{c+d} - 1} \quad (9)$$

$$AFC = \frac{FC}{y} \quad (10)$$

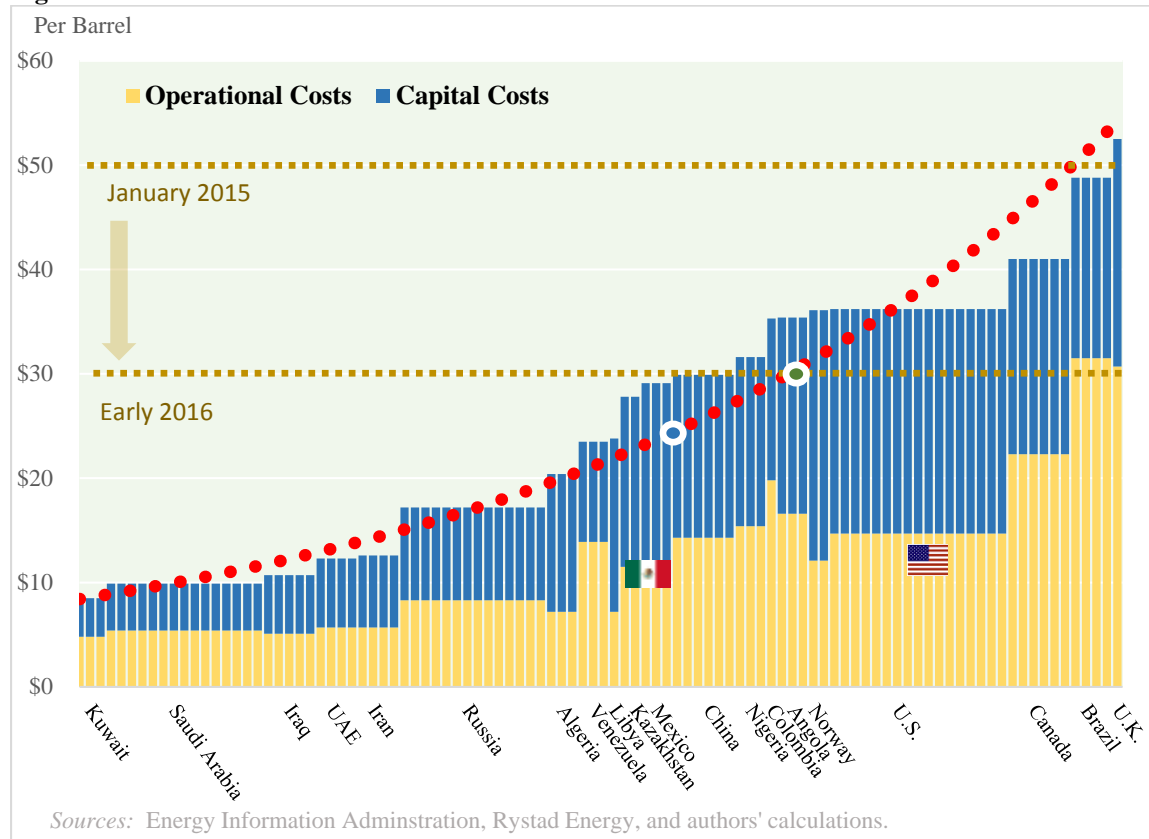
$$AVC = \frac{VC}{y} = v y^{\frac{1}{c+d} - 1} \quad (11)$$

If the firm can choose the level of each input, then the share of the firm's cost expenditure on the inputs of fixed capital, labor, and variable capital are given in equation (12), respectively, by

$$\frac{zF}{C} = \frac{h}{h+c+d}; \quad \frac{wL}{C} = \frac{c}{h+c+d}; \quad \frac{rK}{C} = \frac{d}{h+c+d} \quad (12)$$

Figure 3 illustrates the late 2015 – early 2016 oil production costs for a cross-section of countries (Petroff and Yellin, 2016). Following the decrease in oil prices in 2015, the increase in efficiency has led to decreases in the production costs that prevailed in 2014 and early 2015. In early 2016, the average break-even cost for the U.S. was \$32.60/barrel, and the break-even cost for Mexico was 29.10/barrel. The U.S. has a ratio of [(capital cost)/(operational cost)] = 1.46, and Mexico has ratio of [(capital cost)/(operational cost)] = 1.69, which shows that Mexican production is relatively capital intensive, compared to U.S. oil production. The average production cost in the EF region is slightly above the average cost for other U.S. regions. As shown in figure 4 below, the early 2015 average cost for a South Texas EF firm was estimated to be just above \$50 per barrel.

**Figure 3:** World Oil Cost Curve



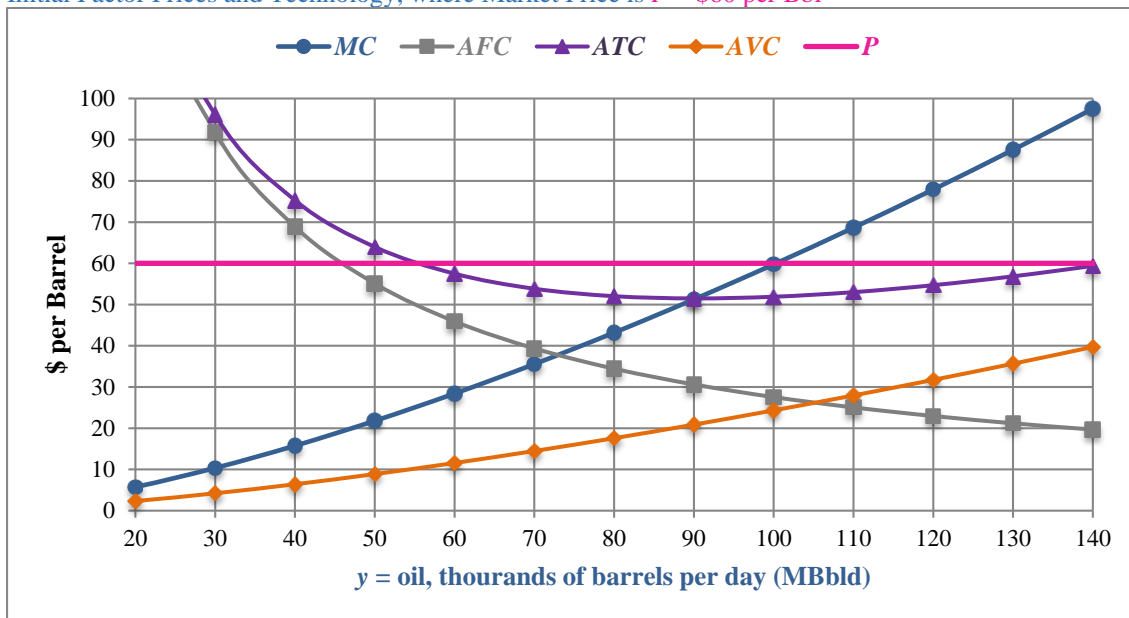
### 2.3 Analysis of a Representative South Texas Firm

Our analysis reflects a representative large oil producer in the South Texas EF region. The parameters are derived from the overall EF region production function and cost parameters, which are derived in detail in the Appendix. In 2015, the five largest firms in that region together produced well over half of the region's total oil output (Ausick, 2015). The largest EF operator, *EOG Resources*, had oil production in the EF region of  $y = 122.3$  MBbld in 2013 and  $y = 170$  MBbld in 2014 (Ausick, 2015, *EOG Resources*, 2014). *Marathon Oil*, the region's second largest operator of wells, had EF production of  $y = 52$  MBbld in 2013 and  $y = 75$  MBbld in 2014 (*Marathon Oil*, form 10K, 2014; Ausick, 2015). Averaging the production for these two firms over the period 2013 – 2014 yields an output level of about  $y = 100$  MBbld, which is roughly 10% of the 2013 – 2014 total EF region's output of 1,000 MBbld. Thus, we define a representative firm that has a daily production output of approximately 10% of the total EF regional daily oil production.

Let the representative EF firm employ 10% of the region's fixed capital, so that  $F = 1,721.344$ . Further, assume that the representative firm has a technical coefficient that is 93% of the overall industry, so that  $a = 0.05423$ , and a cost of fixed capital that is also only 93% of the regional average, so that  $z = 1.60$ . Let the firm's wage and variable cost rate be the same as that for the EF industry, and let the other production function parameters be the same as the overall EF region, so that the production function parameters are  $h = 0.5925$ ,  $c = 0.111$ , and  $d = 0.29625$ .

Given the oil prices in 2013 (see figure 2 above), consider the case where, during 2014, the representative competitive EF firm conservatively forecasts an expected average price of oil at \$60 per barrel, and then chooses the profit-maximizing output level where this price of \$60 equals the marginal cost. As shown in figure 4, this leads to a firm output level of  $y = 100$  MBbld. At this level of production, the average cost is 51.89 per barrel, and the firm is making a profit of about \$8 per barrel.<sup>5</sup> Average fixed costs are \$27.56 per barrel, which is slightly above the average variable cost of \$24.34 per barrel. The amounts of labor and variable capital are given, respectively, by  $L = 5,103$  labor full-time equivalent workers, and  $K = 1,454$  capital units, so that the variable capital to labor ratio is  $K/L = 0.285$ . Note that the marginal cost and average variable cost functions will be concave from the origin (see figure 4), when  $0.5 < c + d < 1$ , convex when  $0 < c + d < 0.5$ , and linear when  $c + d = 0.5$ .

**Figure 4:** Cost Functions for the South Texas EF Region of the Firm in 2013: Initial Factor Prices and Technology, where Market Price is  $P = \$60$  per Bbl



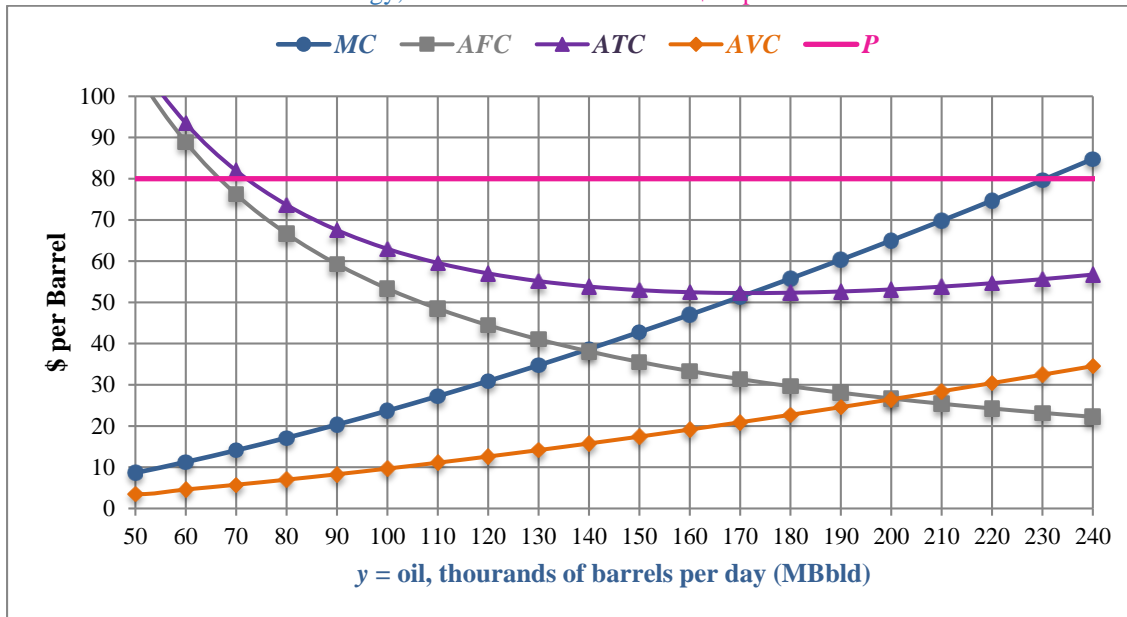
## 2.4 Unrestricted Expansion

Based on projected demand increases in the world oil markets, we consider the case where the WTI price of oil is forecasted to increase from \$60 to \$80 per barrel (which is in the center of *ConocoPhillips'* 2014 forecasted interval for 2015 to 2017, as mentioned above) over a given intermediate time horizon with a length of  $T$  years. Now consider the following changes for the representative firm. Let the new Eagle Ford technical coefficient increase by 2.12 times the original value due to advancements in fracking technology and other technical advances, so that  $a = 0.04122$ . Further assume that the representative firm expands its fixed capital to  $F = 5,164.033$  units, which is 30% of the entire fixed capital for the EF play, and that the unit cost of the fixed capital is 60% of the EF regional average, so that  $z = 1.03$ .

<sup>5</sup> The estimate of average cost above \$50 per barrel also explains the fact that the U.S. shale oil boom did not develop until after 2007.

Figure 5 shows the representative firm's price, cost, and supply functions for the EF regional operations. Over the 2-year period, the profit-maximizing level of output increases at an annual rate of 51.66% per year, from  $y = 100$  MBbld in figure 4, to about  $y = 230$  MBbld in figure 5. Labor and variable capital are given, respectively, by  $L = 15,467$  full-time equivalent workers, and  $K = 4,460$  variable capital units, so that the EF variable capital to labor ratio remains at  $K/L = 0.285$ . The average total cost is \$55.64 per barrel, which yields an average profit of \$24.36 per barrel.

**Figure 5:** Cost Functions for the South Texas EF Region of the Firm in 2015: Initial Factor Prices and Technology, where Market Price is  $P = \$80$  per Bbl



### 3. DYNAMIC ADJUSTMENT UNDER OPTIMAL CONTROL

This section explores the firm's optimal dynamic adjustment behavior in output under the environment of no uncertainty and no capital constraints. Suppose that the representative multiregional firm could adjust immediately with perfect information about future market price of oil, and there is perfect information regarding labor wages and other input costs, so that it could perfectly forecast its own costs. Consider the example captured by figures 4 and 5, in which the price of oil increased from \$60 to \$80 per barrel over the 2-year period from 2013 to 2015, along with the given changes in technology, fixed capital inputs, and factor prices. If there were no forecast uncertainty, no risk premium for undertaking capital investment, and no capital mobility constraints, then the firm would fully adjust from the old 2013 equilibrium in figure 4 to the new 2015 equilibrium in figure 5.

Even in that case of no uncertainty and capital constraints, however, the capital investment and production capacity expansion would take time to complete, so that the adjustment in production would occur with a lag. The firm will choose a time horizon for which it will feasibly be able to expand or reduce its capacity and scale of operation. Let  $T$  denote the final time in years. Since



the EF region's oil and gas reserves are unconventional, any substantial increases in the scale of production will require substantial capital accumulation and time.

Oil producers face the same risks as firms in many other industries, but they also face a number of risks and constraints that are unique to the energy industry. Clô and Orlandi (2015) classify the latter types of risks into geological risk, technical risk, and political risk. These risks and constraints are listed in the *Form 10K* filings by each of the companies, and are almost identically listed across firms. For example, *EOG Resources* (*EOG Resources* Annual Report, 2014, pp. 13 – 20) lists a plethora of risks, some of which include the following: risk of price decline; drilling risks including dry holes; unexpected drilling conditions; title problems; pressure or irregularities in formations, equipment failures or accidents; compliance with environmental, health, and safety laws, especially with regard to fracking, disposal, transportation, and taxes; availability of permits and licenses, costs of shortages and delays in the availability of drillings, fracking services, pressure pumping equipment, qualified personnel, etc.; well blowouts and cratering; loss of well control; crude oil spills, natural gas leaks and pipeline ruptures; pipe failures and casing collapses; injury or loss of life; damage to property, facilities, equipment and crude oil and natural gas reservoirs; repairs necessary to resume operations; failure to find sufficient additional reserves over time that reduce production; potential increases in fracking regulations; the inability of customers and other contractual counterparties to satisfy their obligations; and, risks from competitors that have greater resources.

*EOG Resources* (*EOG Resources* Annual Report, 2014, p. 17) also specifies its capital constraints, and states that it has substantial capital requirements, and may be unable to obtain needed financing on satisfactory terms, if at all. *EOG Resources* intends to finance capital expansions primarily through cash flows from operations, commercial paper, non-core asset sales, revolving credit, and to a lesser extent, bank borrowings. Clô and Orlandi (2015) note that oil companies have historically financed 70% to 80% of their required capital through internal funds. As shown in figure 2, oil prices were relatively more volatile during the post-2009 period than an earlier period between 2000 and 2007. The relatively high oil price volatility after 2009 increased the risk premium, which in turn constrained capital investment in that industry.

### 3.1 Restricted Expansion: Bang-Bang Optimal Control Analysis

In this subsection, we model the dynamic adjustment process for the South Texas EF region's production with capital constraints as a continuous-time optimal control problem. The results show that this risk-adjusted analysis leads to industry behavior that matches the oil production pattern in the EF region. Given that the EF firms operate under capital constraints, the actual expansion of oil production will be less than the unconstrained expansion shown in figures 4 and 5. Let the representative firm's initial planning time begin in 2010, when the firm's initial EF capital and output were minimal, and the price was under \$60 per barrel. Assume further that the firm plans the initial phase of the EF shale oil expansion over a time horizon of 8 years, so that  $T = 8$ .<sup>6</sup> At the initial time,  $t_0$ , in 2010, let the firm's oil production be given by  $y = 28.663$  MBbld.

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<sup>6</sup> The planning horizon can be chosen arbitrarily. In its 2015 annual presentation, ConocoPhillips gives its projected capital expansion, output expansion, and forecasted price growth for the next 3 years, which goes through the end of

Let  $\phi$  represent the average annual expected non-risk adjusted continuously compounded growth rate in output. As figures 4 and 5 indicate, the representative firm's oil production increased from 100 MBbld in 2013 to 230 MBbld in 2015. Let the annual continuous compounding growth rate be  $\phi = 41.65\%$ , which is equivalent to a 51.67% simple annual compounding growth rate. In the presence of capital constraints, however, the firm will not commit the full amount of resources necessary to achieve the 41.65% continuous annual expansion over 8 years.

To illustrate the dynamic adjustment process, let's first define the following variables:

- $T =$  the final time of the time horizon, in years
- $\phi =$  the average annual expected non-risk adjusted growth rate in output
- $\rho =$  percentage of the capital constraint discount on EF regional production growth
- $\theta =$  the maximum commitment percentage of the unconstrained risk-free annual growth rate for the profit-maximizing firm that can be adopted under any projected increase in the unconstrained risk-free production level
- $g(t) =$  the actual commitment percentage of the unconstrained annual growth rate for the profit-maximizing firm employs, given the forecasted expansion growth  $\phi$

In the absence of capital constraints, the maximum percentage of the unconstrained risk-free annual growth rate for the profit-maximizing firm under any projected increase in the unconstrained production level is given by:

$$\theta = 1 - \rho \qquad 0 \leq \rho \leq 1 \qquad (17)$$

The actual output growth is determined by the following differential equation, where  $\dot{y}$  denotes the time derivative of output:

$$\dot{y} = g(t)\phi y(t) \qquad y(0) = y_0 > 0 \qquad 0 \leq g \leq \theta \qquad 0 \leq \phi \leq \theta \qquad (18)$$

Equation (18) shows that capital constrained oil production will only instantaneously expand at the reduced annual rate of  $g(t)\phi < \phi$ , since the firm is not committing the resources that it otherwise would under the risk-free scenario with no constraints on capital mobility.

The firm must choose the percentage of resources ( $g$ ) that it will commit to, knowing that a larger commitment leads to a capital requirements, where the maximum capital expansion percentage is given by  $\theta$ . The risk-averse firm selects the balance between maximizing the expected risk-adjusted profit and maintaining maximum risk avoidance. Note that oil producers are forced to follow risk-averse behavior, since the vast majority of expansion is internally financed, where higher risks lead to greater capital constraints. The performance index that penalizes the firm choosing higher (more risky) growth rates that are closer to the maximum EF regional growth allowed by the capital mobility constraint is given by:

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the year 2017. Thus, a time horizon of 8 years from the beginning of 2010 to the end of 2017 covers post-2009 EF expansion period through the region's top operators' 3-year planning horizon forward from the year 2015.

$$\min_g J = \int_0^T [g(t) - \theta] \phi y(t) dt \quad 0 < \theta \leq 1 < \phi \theta T; \quad T \text{ is fixed; } y(T) \text{ is free} \quad (19)$$

Since  $g$  and  $\theta$  are all positive fractions where  $0 \leq g \leq \theta$ , and since  $\phi > 0$  and  $y > 0$ , the performance index integral will be negative. The objective is to make the performance index as small as possible, i.e., to make its absolute value as large as possible. The examples below will show that this index is efficient in providing the firm with a pragmatic strategy for achieving the optimal timing and amounts of constrained EF regional production capacity increases over the adjustment period.

Using *Pontryagin's Minimum Principle*, the *Hamiltonian* is expressed as follows, where  $\lambda$  is the costate variable:

$$\min_g H = \lambda g(t) \phi y(t) + [g(t) - \theta] \phi y(t) = [\lambda + 1] y(t) \phi g(t) - \theta \phi y(t) \quad (20)$$

Since the performance index in equation (20) is linear in the control variable  $g$ , and the control variable  $g$  enters into the nonlinear differential equation in (18) as a linear variable multiplied by a function of the state variable  $y$ , the bounded optimal control rule will be *maximum effort*, or *bang-bang* (Sage and White, 1977). Output production is positive, so  $y(t) > 0$ ; thus, the optimum values of the growth commitment percentage,  $g^*$ , are given by the following *bang-bang* optimal control rule:

$$g^* = \{ \theta \text{ when } \lambda < -1; 0 \text{ when } \lambda > -1; \text{ arbitrary when } \lambda = -1 \} \quad (21)$$

The costate differential equation, which is solved for the costate variable ( $\lambda$ ) in retrograde time, is derived as

$$\dot{\lambda} = - \frac{\partial H}{\partial y} = -\lambda \phi g^* - \phi g^* + \phi \theta = -(1 + \lambda) \phi g^* + \phi \theta \quad \lambda(T) = 0 \quad (22)$$

As  $t \rightarrow T$ , then  $\lambda \rightarrow 0$ , and thus  $\lambda > -1$ . From the optimal values of  $g^*$  in equation (21), this implies that  $g^* = 0$ . Thus, the costate equation (22) becomes

$$\dot{\lambda} = \phi \theta \quad \lambda(T) = 0 \quad (23)$$

The solution to equation (23) as  $t \rightarrow T$  is given by equation (24) as

$$\lambda(t) = -\phi \theta (T - t) \quad (24)$$

From equation (21), the optimal growth percentage will switch from  $\theta$  to 0 when  $\lambda = -1$ . Substituting the value of  $\lambda = -1$  into the left-hand-side of equation (24), and then solving for  $t$  yields the switching time  $t_s$ .

$$t_s = \frac{\phi \theta T - 1}{\phi \theta} \quad 0 < \theta \leq 1 < \phi \theta T \quad (25)$$

Whenever  $t < t_s$ , then as shown in equation (21),  $\lambda < -1$ ,  $g^* = \theta$ , so that the costate equation becomes

$$\dot{\lambda} = -(1 + \lambda)\phi\theta + \phi\theta = -\phi\theta\lambda \quad \lambda(t_s) = -1 \quad (26)$$

Solving the differential equation (26) in retrograde time yields the following:

$$\lambda = -\phi\theta(T - t_s) e^{\phi\theta(t_s - t)} \quad 0 < t < t_s \quad (27)$$

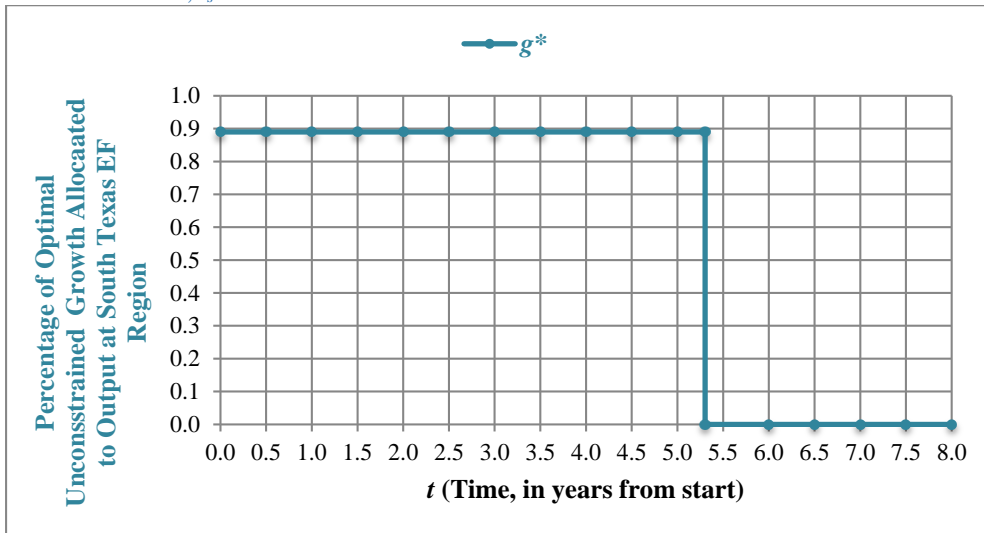
The solution for the output level ( $y$ ) before the switching time ( $t_s$ ) is found by substituting the initial optimal growth commitment rate ( $g^* = \theta$ ) into the differential equation (18), whereas the output level after the switching time is found by substituting zero post-switching growth rate ( $g^* = 0$ ) into equation (18). Therefore, the output differential equation becomes:

$$\dot{y} = \phi\theta y(t) \quad \text{for } 0 < t < t_s; \quad \dot{y} = 0 \quad \text{for } t_s < t < T \quad (28)$$

The optimal level of output is thus given by the following trajectory:

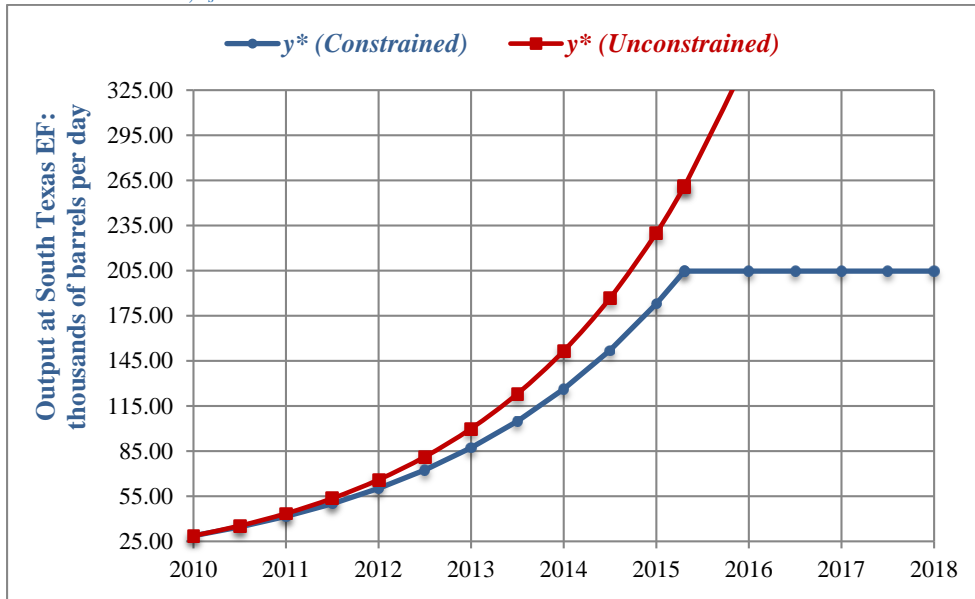
$$y = y_0 e^{\phi\theta t} \quad \text{for } 0 < t < t_s; \quad y = y_0 e^{\phi\theta(T - t_s)} \quad \text{for } t_s \leq t \leq T \quad (29)$$

**Figure 6:** Optimal South Texas EF Output Growth Rate Trajectory,  $g^*$   
 $\theta = 0.89$ ;  $T = 8$ ;  $t_s = 5.302$



**Figure 7:** Optimal Oil Output at South Texas EF,  $y^*$

$\theta = 0.89$ ;  $T = 8$ ;  $t_s = 5.302$



Consider the case where the capital restriction on the South Texas EF regional production growth is  $\rho = 0.11$ , so that maximum percentage of growth commitment is  $\theta = 0.89$  ( $\theta = 1 - \rho = 0.89$ ). The optimal trajectories for the percentage of growth commitment ( $g^*$ ) and the level of oil production ( $y^*$ ) are shown in figures 6 and 7 respectively, where the time horizon is  $T = 8$  years. Optimization leads to a switching time of  $t_s = 5.302$  years, which occurs during the first half of year 2015. The representative firm will expand its inputs so that oil production is growing at 89% of the unconstrained rate until the first half of year 2015, when its production reaches 205 MBbld. Thereafter, the firm will have an expansion of 0% of the unconstrained growth rate, so that  $g^* = 0$ , as shown in figure 6. As shown in figure 7, the firm's oil production will level off and remain relatively steady after the middle of the first half of year 2015, unless there is further change in the average price per barrel and/or a change in production technology, and/or a change in the input costs.

The representative firm's size was determined by averaging the output of *EOG Resources* with *Marathon Oil*. From 2013 to 2014, *EOG Resources*' production increased from 122.3 MBbld to 178 MBbld, which is continuously compounded annual rate of 37.53% (*EOG Resources*, Annual Report, 2014), and *Marathon Oil*'s production increased from 52 MBbld to 75 MBbld, which is a continuously compounded annual rate of 36.62% (*Marathon Oil*, Annual Report, 2014). When the two firms' output are averaged for the years 2013 and 2014, the average production increases from 87.15 MBbld to 126.50 MBbld, which is a continuously compounded annual rate of 37.261%, and a simple annual compounded growth rate of 45.15%. In figure 7, the optimal risk-adjusted constrained production of 87.15 MBbld in 2013 and 126.26 MBbld in 2014 is approximately equal to the representative firm's actual production in 2013 and 2014. This corresponds to an unrestricted continuously compounded growth rate of  $\phi = 41.65\%$ , so that in the absence of capital

constraints, the output would have been 100 MBbld in 2013, 151.66 MBbld in 2014, and 230 MBbld in 2015.

Figure 7 illustrates an important result. The firm's constrained production of 87.15 MBbld in year 2013 is less than the risk-free production level of 100 MBbld that was shown in figure 4, and the predicted constrained production of 182.9 MBbld in year 2015 is less than the 230 MBbld unconstrained output in figure 5. Additionally, the optimal control solution with capital constraints suggests that growth will stagnate, and output will level off after the switching time. According to the model, if the largest producers in the South Texas EF region follow an optimal growth pattern similar to that in figure 7, then the overall output in the EF play would also level off toward the end of planned expansion horizon, as it actually did by the beginning of year 2015.

Due to the relatively high price volatility in the post-2009 period, the individual firms' optimal expansion paths would lead to an expected slowdown in the region's output growth, unless the expected average oil price sustained an increase relative to the cost of production. Given an approximate estimate for the capital constraint  $\rho$ , the timing and the peak production level can be reasonably estimated using the methods in this analysis.

Figures 4 and 5 show the profit-maximizing output production given the fixed capital in 2013 and 2015, respectively. However, note that the firm is maximizing the total net present value of current and future profits as opposed to average profits. Thus, during each successive year of the unconstrained production scenario, the firm is adding fixed and variable capital inputs, expanding technology inputs, and increasing total profit earned from the EF region, even when the expected average price remains constant at \$80 per barrel. This is represented by rightward shifts in the firms' marginal cost curves.

However, the increased price volatility and capital constraints would have a stifling effect on oil production growth, even when the output price remains unchanged on average. Thus, the EF region's shale oil reserves would not be extracted as quickly as the initial fracking expansion trend would have suggested. This explains the slowdown in the growth of oil rigs beginning in 2013, as shown in figure 8. This result is consistent with Kellogg (2014), who employs a hazard model to illustrate that drilling activity decreases by the magnitude predicted by a real options model.

**Figure 8:** Number of U.S. Oil Rigs



The slowdown in oil production is accentuated when producers revise their price forecasts downward. The WTI oil price level began to fall in mid-2014, and fell below \$80 per barrel in November, and to \$60 by December. For much of 2015, the oil price fluctuated dramatically between \$30 and \$60 per barrel. In response to the oil price plunge and increased volatility, the number of oil rigs for drilling new wells fell precipitously (see figure 8). According to our model, if the firm's oil price forecasts are revised downward below \$80, then new unconstrained output in figure 5 and the capital constrained output trajectory in figure 7 would level off just below 200 MBbld, from mid-2015 throughout the remainder of the planning horizon.

It is important to note, however, that the capital constrained model predicts a growth rate that lags and levels off relative to the unconstrained model, regardless of any subsequent decreases in actual or forecasted prices, which are irrelevant to the model's predictions before the forecast revisions occur. Any subsequent price reduction would reduce the ongoing level of production and investment over the remaining horizon, in which the new level of output is determined where the new price equals marginal cost in figure 5.

#### 4. EXTENDING THE MODEL TO A MEXICAN SUBSIDIARY

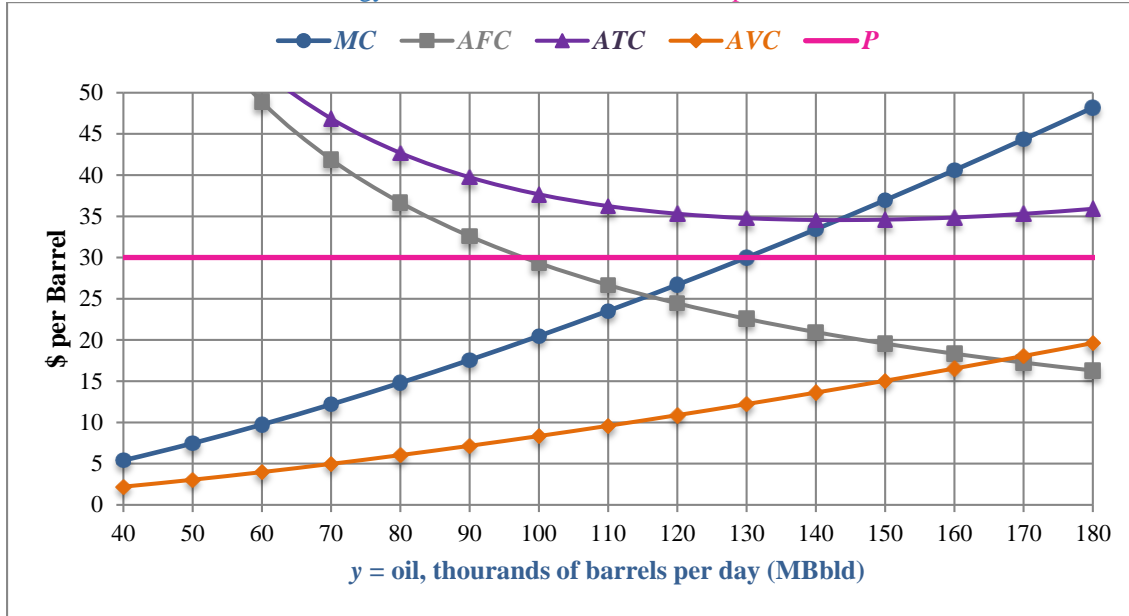
Drilling of unconventional shale oil or gas wells in the EF region currently requires about 1 month to complete. Once operational, the production will generally fall by over 60% in the first year, and the wells do not last more than 8 to 10 years (Loder, 2013). By comparison, production at conventional wells generally declines by only about 50% after two years, and the wells can pump for 20 years or more (Loder, 2013). The fixed cost per well in the U.S. fell from about \$14 million in 2010 to \$6 million in 2011, and continued to drop to \$8 million in 2012 and \$4.5 million in 2014 (Cowan, 2011, Rigzone, 2014).

One of the reasons for the declining fixed costs is the increase in the number of wells per rig. There has also been considerable variation in the number wells per rig in the U.S. By 2013, there was an average of 13 wells per rig in the EF region in 2013 (Tunstall, 2014), as compared to 20 wells per rig for the U.S. (Baker-Hughes Well Count, 2015). Thus, production in other U.S. regions varies from the South Texas EF region in inputs and technology. The relative size of a firm's EF production as a percentage of a firm's total U.S. production varies from 60% for EOG (EOG Annual report 2014) to 40% for Marathon (Marathon Annual Report, 2014) to less than 10% for Conoco Phillips (ConocoPhillips Annual Report, 2014).

The representative firm's production structure and inputs are different for the operations in South Texas, the other U.S. regions, and Mexico. In 2016, U.S. oil producers had an average ratio of [capital cost/operational cost] =  $[21.50/14.70] = 1.46$ , while the average Mexican oil producer had ratio of  $[18.30/10.80] = 1.69$  (Petroff and Yellin, 2016). This means that Mexican production is relatively more intensive in the capital inputs, and has a larger share of capital costs, as shown in figure 3. Thus, this analysis assumes that the representative dual country firm has a larger [(capital cost)/(operational cost)] ratio in its Mexican subsidiary, as compared to its South Texas division.

For the current analysis, assume that the representative South Texas EF plant has scaled back production due to falling oil prices, which average about \$30/Bbl. Since a firm will have only continued to operate the most efficient wells, it is more efficient than it was in 2015, and the analysis assigns the following initial input values:  $F = 5,164.033$ ;  $a = 0.0437$ ;  $c = 0.111$ ;  $d = 0.2963$ ;  $h = 0.64286$ ;  $A = 6.9321$ ;  $FC = 2,933.396$ ;  $w = 0.13$ ;  $r = 1.2172$ ;  $z = 0.57$ .

**Figure 9:** Cost Functions for the South Texas EF Region of the Firm: 2016 Factor Prices and Technology, where Market Price is  $P = \$30$  per Bbl



Profit-maximization leads to the functions shown in figure 9. The South Texas region's supply function is given by the marginal cost function, so that the profit-maximizing level of output is  $y = 130$  MBbld. The average fixed capital cost is \$22.56/Bbl, the average variable cost is \$12.22/Bbl, and the average total cost is \$34.79/Bbl. These costs are similar to the U.S. average and capital, operational, and total costs in 2016 (shown in figure 3), which are \$21.50, \$14.70, and \$36.20, respectively. Labor and variable capital are given, respectively, by  $L = 3,330$  labor daily labor units, and  $K = 949$  daily capital units. The South Texas EF division is initially making a short-term loss of \$4.79/Bbl.



**Figure 10:** Cost Functions for the Mexican Region of the Firm:  
2016 Factor Prices and Technology, where Market Price is  $P = \$30$  per Bbl

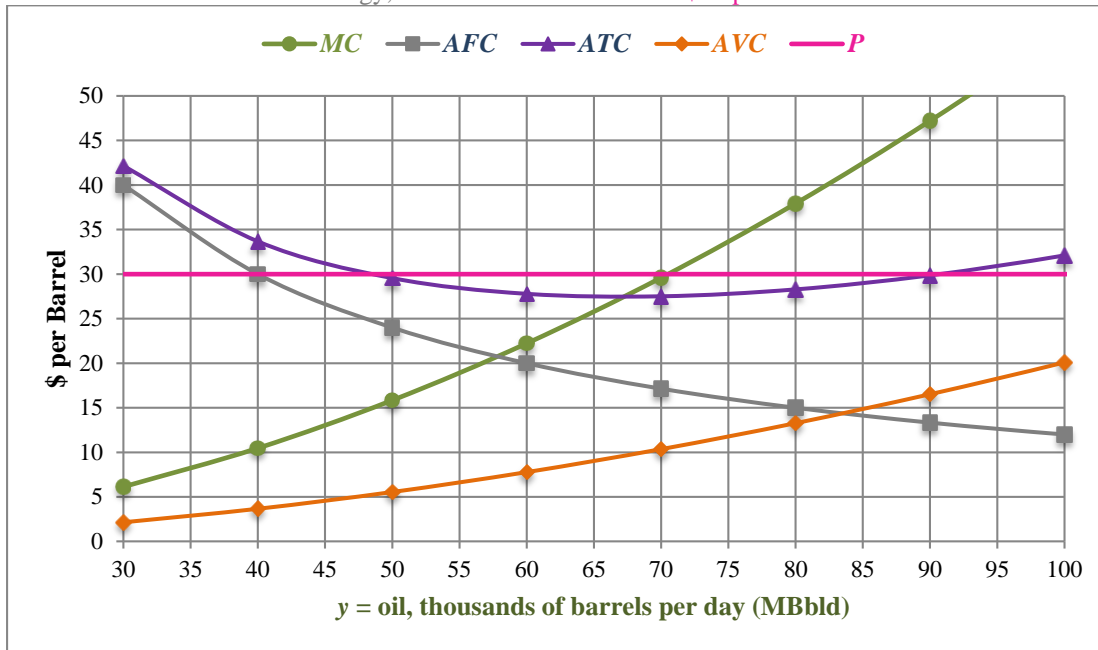
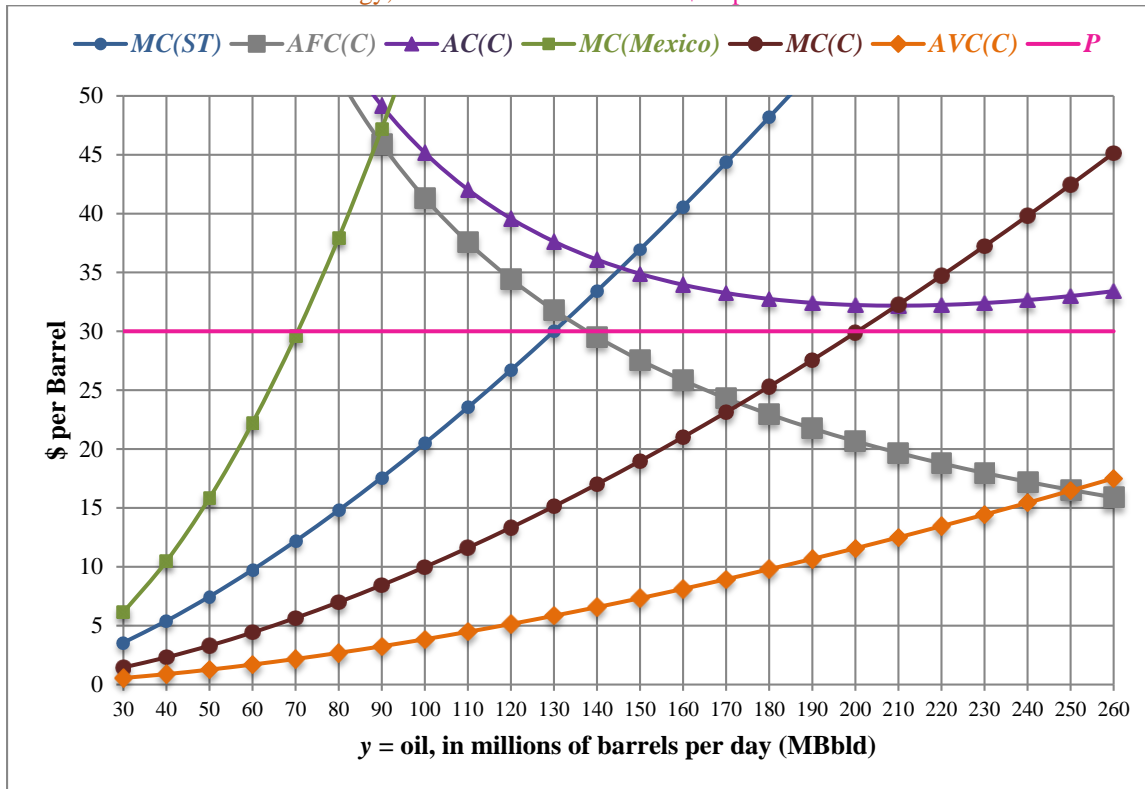


Figure 10 shows the costs for the Mexican EF region in 2016, when the Mexican branch is in the early stages of development. Let the technology and input prices for the Mexican branch of production be given as follows:  $F = 1,500$ ;  $a = 0.065$ ;  $c = 0.08$ ;  $d = 0.27$ ;  $h = 0.62$ ;  $A = 6.0547$ ;  $FC = 1,200$ ;  $w = .09$ ;  $r = 0.6$ ;  $z = 0.8$ . The Mexican supply function is given by the marginal cost function, so that the profit-maximizing level of output is  $y = 70$  MBbld. Labor and variable capital are given, respectively, by  $L = 1,842$  labor daily labor units, and  $K = 932$ . The average variable cost and the average fixed capital cost is \$17.14 Bbl, the average variable cost is \$10.36/Bbl, and the average total cost is about \$27.50/Bbl. These costs approximate the Mexican average and capital, operational, and total costs in 2016 (shown in figure 3), which are \$18.30, \$10.80, and \$29.10, respectively. Labor and variable capital are given, respectively, by  $L = 3,330$  labor daily labor units, and  $K = 949$  daily capital units. The Mexican division is initially making a short-term profit of \$2.50/Bbl.

The multinational dual-plant firm maximizes profit where  $P = MC_{ST} = MC_{Mexico}$ , where the subscript  $ST$  denotes South Texas. The firm's overall combined  $MC$  function, and hence its overall supply function, is the horizontal sum of the two individual regional  $MC$  curves, which is shown in figure 11 by the  $MC_C$  curve, where the subscript  $C$  denotes the combined firm. The firm's combined total cost function is derived in the appendix. Figure 11 shows that total production is 200 MBbld, where 130 MBbld are produced in South Texas, and 70MBbld are produced in Mexico. The firm's combined average cost is \$32.24/Bbl, so that the combined firm has an initial loss of \$2.24/Bbl.

**Figure 11:** Cost Functions for the Integrated Multinational Firm:  
2016 Factor Prices and Technology, where Market Price is  $P = \$30$  per Bbl

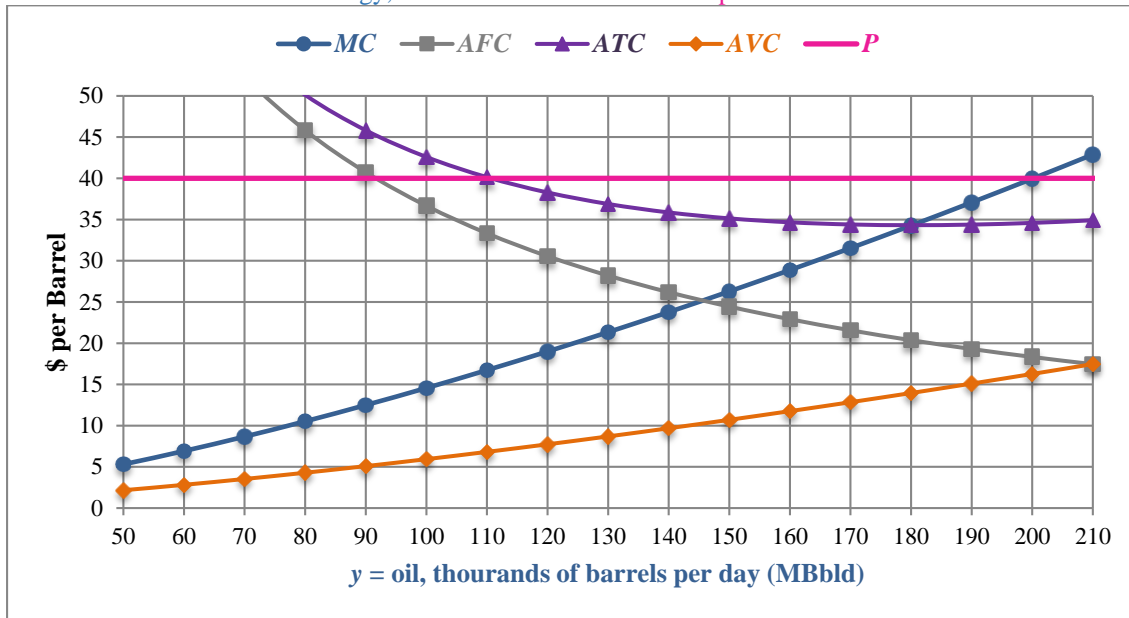


#### 4.1 Unrestricted Expansion

Consider the case where the representative firm in year 2019 expects the average price to increase from previously \$30/Bbl to \$40/Bbl, and thus plans some expansion in South Texas. The new input parameters for South Texas are:  $F = 6,455.042$ ;  $a = 0.0443$ ;  $c = 0.111$ ;  $d = 0.2963$ ;  $h = 0.5925$ ;  $A = 8.0174$ ;  $FC = 3,666.746$ ;  $w = 0.138$ ;  $r = 1.2172$ ;  $z = 0.57$ . Based on the recent Mexican legislation, we assume that the Mexican division will also undertake a large planned expansion in its operations, somewhat mirroring the initial development of the South Texas EF region from 2009 to 2015. The new input parameters for the Mexican division are:  $F = 2,250$ ;  $a = 0.078$ ;  $c = 0.08$ ;  $d = 0.27$ ;  $h = 0.62$ ;  $A = 9.3422$ ;  $FC = 2,700$ ;  $w = .09$ ;  $r = 0.6$ ;  $z = 1.2$ .

When there are no capital constraints, figure 12 shows the representative firm's South Texas operations in 2019 under the forecasted expansion. Over the 3-year period, the profit-maximizing level of output has increased by continuously compounded annual rate of 14.36%, from  $y = 130$  MBbld in figure 8, to about  $y = 200$  MBbld. The average total cost is \$34.60/Bbl, which yields an average profit of \$6.40/Bbl.

**Figure 12:** Cost Functions for the South Texas Region of the Firm:  
2019 Factor Prices and Technology, where Market Price is  $P = 40$  per Bbl



**Figure 13:** Cost Functions for the Mexican Region of the Firm:  
2019 Factor Prices and Technology, where Market Price is  $P = 40$  per Bbl

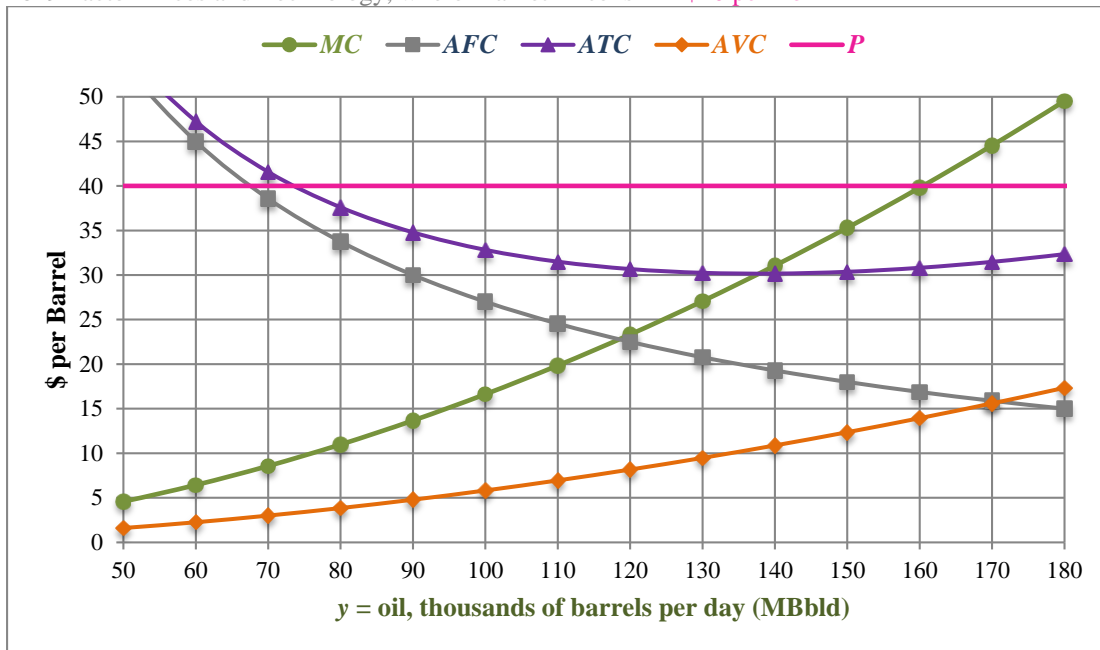


Figure 13 shows the new curves for the firm’s Mexican division. Over the 3-year period, the Mexican marginal cost (and supply) function shows that the profit-maximizing level of output has increased by 129%, from  $y = 70$  MBbld (in figure 10) to  $y = 160$  MBbld (in figure 13). The average total cost is  $\$30.80/\text{Bbl}$ , which yields an average profit of  $\$9.20/\text{Bbl}$ . Over the 3-year period, the

profit-maximizing level of output has increased by continuously compounded annual rate of  $\phi = 27.56\%$

**Figure 14:** Cost Functions for the Integrated Multinational Firm:  
2019 Factor Prices and Technology, where the New Market Price is  $P = \$40$  per Bbl

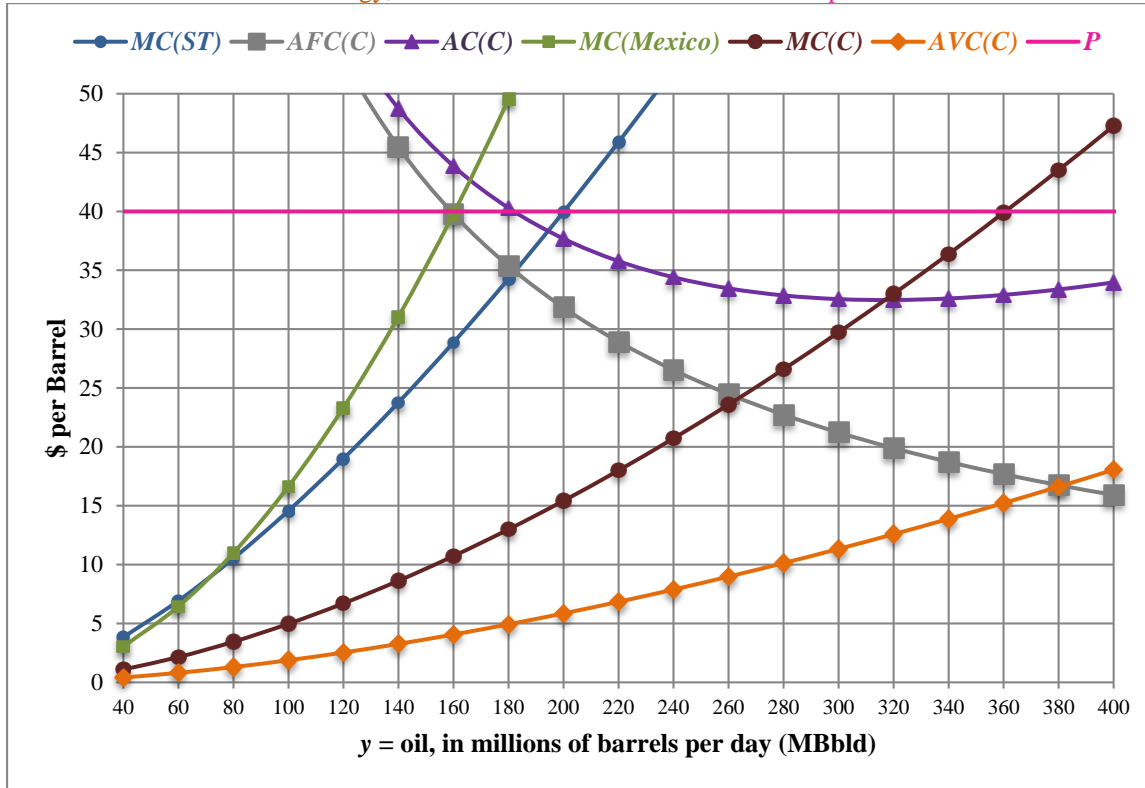
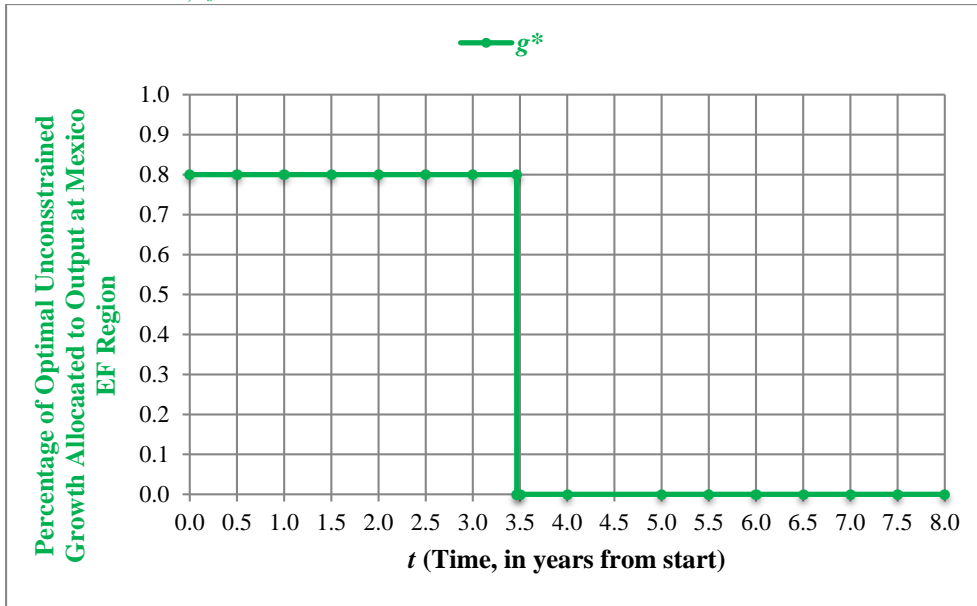


Figure 14 shows the combined operations of the multinational dual-region firm, where there are no capital restrictions. The total daily production level is 360 MBbld, where 200 MBbld are produced in South Texas, and 160 MBbld are produced in Mexico. The average cost is  $AC = \$32.91/\text{Bbl}$ , so that forecasted average profit is  $\$7.09/\text{Bbl}$ , and the total daily profit is  $(\$7.09)(360 \text{ MBbld}) = \$2.55 \text{ billion}$ .

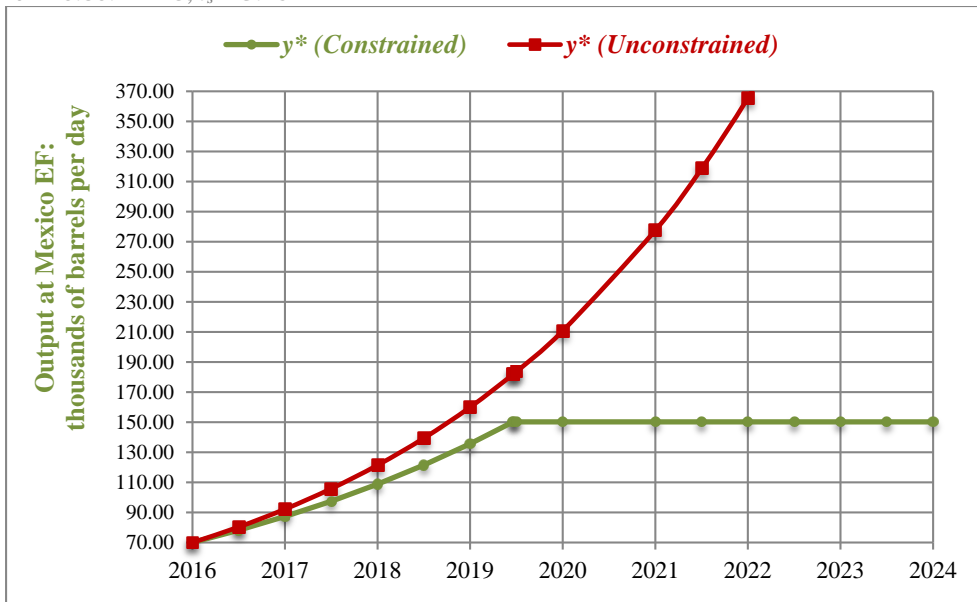
#### 4.1 Restricted Expansion in Mexico

Figures 12 – 14 illustrate the situation where there are no impediments to capital expansion. Since any firm that expands its international division will initially encounter some capital restrictions, the forecasted output growth must account for this. Although the capital restrictions will vary across firms, we assume that the constraint is almost twice as restrictive for the international division as it was for the initial domestic expansion. Thus, let the percentage capital discount be given by  $\rho = 0.20$ , so that the maximum percentage of any unconstrained expansion is  $\theta = 0.80$ . Again, we specify a planning horizon of  $T = 8$  years, which is consistent with that of the initial development of the South Texas EF region.

**Figure 15:** Optimal Mexican Output Growth Rate Trajectory,  $g^*$   
 $\theta = 0.80$ ;  $T = 8$ ;  $t_s = 3.464$



**Figure 16:** Optimal Oil Output at Mexican Region,  $y^*$   
 $\theta = 0.80$ ;  $T = 8$ ;  $t_s = 3.464$



Figures 15 and 16 show the optimal trajectories for the percentage of growth commitment ( $g^*$ ) and the level of oil production ( $y^*$ ), where the time horizon is  $T = 8$  years. The optimal switching time is now given by  $t_s = 3.464$  years, which occurs during the middle of the year 2019. The representative firm will expand its inputs so that Mexican oil production is growing at approximately 80% of the unconstrained rate until the middle of year 2019, when its production

reaches 150 MBbld. The Mexican division will have an expansion of 0% of the unconstrained growth rate, so that  $g^* = 0$ , as shown in figure 15.

Figure 16 shows that the Mexican division's oil production will level off and remain relatively steady after the middle of year 2019, unless there is further change in the average price per barrel, production technology, or the input costs. These simulations demonstrate that the bulk of a U.S. firm's expansion within its Mexican subsidiary is likely to occur at the beginning the growth period, and is likely to fall off after the initial burst of high growth. From this perspective, the Mexican government should follow a policy prescription that is aimed at reducing capital constraints, propping up output, and providing incentives that stimulate existing firms' operations in Mexico. This growth maintenance stance could help to reduce stagnation and/or production declines in established firms.

## 5. CONCLUSION

We have first developed a dynamic output model that describes historical development in shale oil production particularly in the Eagle Ford play of the U.S. In light of the recent Mexican legislation, we have also extended our analysis to the case of a dual-country model of oil production that is calibrated using industry data of South Texas and Mexico. Our model provides predictions for the optimal timing and levels of capacity expansions in a firm's oil production in the two countries when the approximate capital constraint discounts are defined. Essentially, the analysis implies that the expansion into Mexico will be biased upward if the capital mobility constraints are not taken into account.

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## APPENDIX

### A1. Parameters of the Industry Costs and Production Function

Since there is considerable diversity in the sizes of the acreage, rigs, well counts, and oil production among oil producers in the Eagle Ford (EF) region, our analysis is meant to be primarily illustrative. Our model is calibrated with data from 2013 – 2014, when largest EF operator by acreage and wells was *EOG Resources*, while *Marathon Oil* was the second largest EF operator by wells and third in acreage (Tunstall, 2014, p. 53). Tunstall (2014) estimates that in 2013, the total direct EF labor is  $L = 42,607$  full-time equivalent employees with an average annual salary of \$47,584. This implies an annual average daily wage rate of  $w = \$130$ . Assuming an approximate EF production cost of \$50 per barrel and the daily production level of  $y = \$1,000$  MBbld in 2013-2014, the total EF production cost is about  $C = \$50$  million per day. Thus, the share of labor costs is  $wL / C = \$5.55$  million / \$50 million = 11.1%.

Next, assume that the oil industry is approximately characterized by constant returns to scale in the marginal region of planned production. The industry's production functions will thus be homogeneous of degree one, so that  $h + c + d = 1$ . From equation (16), these exponents  $h$ ,  $c$ , and  $d$ , provide the cost shares of fixed capital, labor, and variable capital, respectively. Based on the above calculation,  $c = 11.1\%$ .

Hartley and Medlock (2008) model oil production so that labor productivity and variable capital productivity decrease as cumulative past production increases, since reservoirs with richer deposits are drilled first, and since more water injections may be required to keep older wells productive. Our model can account for drains in productivity caused by cumulative output in two ways. First, the technical parameter of the comparative static model can change when the technology or average productivity of the production and extraction process changes. Second, given the fixed capital, the model does have decreasing returns to scale in the variable inputs.

There are definitional issues that complicate the classification of relatively fixed capital expenditure, and variable/operating capital expenditure. In the oil and gas industry, firms have been historically categorized by production techniques where the ratio of fixed capital to variable capital varies from 1:1 to 4:1 (Clô and Orlandi, 2015). In the development of the EF play, the split between capital costs and operating costs has been measured as low as 1:1 (Rodgers, 2015). As the duration of a well increases, operating costs increase as fixed costs stay constant, so that their ratio is not constant. The typical EF well takes about one month to complete, and has an average cost of about \$6 million in 2011, and about \$4.5 million in 2014 (Cowan, 2011; Cooks, 2014).

There is also an asymmetry in capital expansion and contraction. Once a well has been drilled, it represents a fixed cost, even if the firm decreases output or ceases production at current wells. However, when considering a proposed sizable expansion in a region such as the EF play, the exploration budget, number of new wells, and number of operating rigs are all initially variable. Thus, fixed capital cannot just be classified as costs that must be paid regardless of output level (as is typical for most industries), nor cleanly divided as in Tully (2015), so that fixed costs constitute the upfront exploration, drilling, and fracking investments for the wells, whereas

variable costs consist of the continuing operating expenses for labor, electricity, etc., which are required to continually extract the oil (Loder, 2013).

Given that labor costs are primarily a variable operational cost, and that current EF fixed to variable cost ratios are on the lower portion of the historical range, and given that the rapid development of the EF play provides considerable latitude for management to choose its capital size and composition, the parameter estimates assume that the overall industry has a fixed to variable capital expenditure ratio of 2:1. Although this may vary over time for each firm as well as from firm to firm, the methodology remains valid regardless the initial fixed/variable capital ratio.

Using the EF data for 2013 by Tunstall (2014) and the above calculations, where  $c = 11.1\%$ , total daily labor cost is \$5,554,599.24 and total daily cost is  $C = \$50$  million, the total daily capital cost, which is the sum of the daily fixed and variable capital cost, is  $zF + rK = \$44,445,400.76$  ( $= \$50,000,000 - \$5,554,599.24$ ). When fixed capital expenditure is twice variable capital expenditure, the share of fixed and variable capital costs (which are also the Cobb-Douglas production function parameters) are respectively given by  $h = zF / C = \$29,630,267.18 / \$50,000,000 = 59.25\%$ , and  $d = rK / C = \$14,815,133.59 / \$50,000,000 = 29.625\%$ .

*ConocoPhillips* (2015) assumes an internal rate of return on investment of 10% at break-even prices for the EF region. Assuming that the rental cost of both fixed and variable capital is 10% of the respective capital costs, the respective values for the rental cost of fixed capital, the level of fixed capital, the rental cost of variable capital, and the level of variable capital are as follows:  $z = \$1,721$ ;  $F = 17,213.44$ ;  $r = \$1,217.17$ ;  $K = 12,171.74$ . The industry technical production function parameter,  $a$ , is determined by substituting the input levels ( $F = 17,213.44$ ,  $L = 42,607$ ,  $K = 12,171.74$ ), the parameters ( $h = 0.5925$ ,  $c = 0.111$ ,  $d = 0.29625$ ), and output ( $y = 1,000$  MBbld) into equation (1), which yields an EF region industry value of  $a = 0.05836$ .

## A2. Parameters of the Industry Costs and Production Function

The dual country firm's combined total cost function is derived as follows for  $i = 1, 2$ , where the U.S. parent firm in South Texas is country 1, and the Mexico is country 2. The decreasing returns to scale Cobb-Douglas function for each country is given by

$$y_i = A_i L_i^{c_i} K_i^{d_i} \quad A_i = a_i F_i^{h_i} \quad A_i, h_i, c_i, d_i > 0; \quad c_i + d_i < 1 \quad i = 1, 2 \quad (A1)$$

The minimum cost function can be expressed as

$$C_i = FC_i + v_i y_i^{\delta_i} \quad \text{where } \delta_i = \frac{1}{c_i + d_i} \quad i = 1, 2 \quad (A2)$$

The marginal cost function for each country is found by differentiating the cost function with respect to output, which leads to equation (A3).

$$MC_i = \frac{d C_i}{d y_i} = \gamma_i y_i^{\mu_i} \quad \gamma_i = \delta_i v_i; \quad \mu_i = \delta_i - 1; \quad i = 1, 2 \quad (A3)$$

First, rearrange the marginal cost functions  $MC_i$  for each country in (A3) so that they express output as a function of marginal cost:

$$y_i = \frac{MC_i^{1/\mu_i}}{\gamma_i^{1/\mu_i}} \quad i = 1, 2 \quad (A4)$$

Let  $y_C$  denote the output for the combined multinational firm, where

$$y_C = \sum_{i=1}^2 y_i \quad i = 1, 2 \quad (A5)$$

Substitute (A4) into (A5), and set  $MC_1 = MC_2 = MC_C$ , and then rearrange terms. This yields inverse marginal cost function,  $y_C = y_C(MC_C)$  for the combined firm, which can be expressed as

$$y_C = \frac{\gamma_2^{1/\mu_2} MC_C^{1/\mu_1} + \gamma_1^{1/\mu_1} MC_C^{1/\mu_2}}{\gamma_1^{1/\mu_1} \gamma_2^{1/\mu_2}} \quad (A6)$$

The marginal cost function is given by  $MC_C = y_C^{-1}(MC_C)$ . The minimum total cost function for the combined firm is found by integrating the merged marginal cost function, where the constant of integration equals the sum of the fixed costs in the U.S. and Mexican plants.

Since equation (A6) cannot be rearranged where  $MC_C$  is alone on the left-hand side, the combined dual-country firm's output and costs are found as follows. Once the market price has been forecasted in a competitive market, the profit-maximizing dual-country firm will set  $P = MC_C$ . This can value can be used in equation (A6) to determine the optimal level of output,  $y_C$ .

The combined firm's total cost and marginal cost functions are given by (A7) and (A8), respectively, as

$$C_C = FC_C + v_C y_C^{\delta_C} \quad \delta_C = \frac{1}{c_C + d_C} \quad FC_C = FC_1 + FC_2 \quad (A7)$$

$$MC_C = \frac{d C_i}{d y_i} = \gamma_C y_C^{\mu_C} \quad \gamma_C = \delta_C v_C; \quad \mu_C = \delta_C - 1; \quad (A8)$$

This parameters in equation (A8) can be found for any region of the marginal cost curve by selecting any two positive values for marginal cost ( $MC_C$ ), and substituting them into equation (A6) and solving the associated levels of output ( $y_C$ ). The two ( $y_C, MC_C$ ) pairs can be used to solve equation (A6), which then has 2 equations and 2 unknown parameters,  $\gamma_C$  and  $\mu_C$ . Once these are known, the marginal cost function can be integrated to recover the total cost function parameters in equation (A7). This allows the firm to forecast its total cost, average total cost, variable cost, average variable cost, and average fixed cost. This method offers a pragmatic technique for finding the cost and functions for the multi-country firm whenever the production function can be approximated by a Cobb-Douglas form.

# Do Rice Prices Follow a Random Walk? Evidence from Markov Switching Unit Root Tests for Asian Markets

JIM LEE<sup>1</sup>

*Texas A&M University-Corpus Christi  
Corpus Christi, Texas, USA*

HAROLD GLENN A. VALERA

*University of Waikato  
Hamilton, New Zealand*

*This study revisits the issue of mean reversion in the import rice prices of Asian countries over the period between 1995 and 2015. Augmented Dickey Fuller tests with a conventional linear regression model support the presence of a unit root in the levels of the price data. However, when regressions allow for Markov switching in coefficients and variances to capture periodic shifts in levels and volatilities, there is strong evidence against the unit-root null hypothesis in favor of stationarity over much of the observation period.*

**KEYWORDS**    *Unit root, Markov switching, structural change, rice price*

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<sup>1</sup> Address correspondence to Jim Lee, Texas A&M University-Corpus Christi, Corpus Christi, Texas, USA.  
E-mail: [jim.lee@tamucc.edu](mailto:jim.lee@tamucc.edu)

## HIGHLIGHTS

- This paper tests for mean reversion across six Asian countries' rice price levels.
- Structural breaks in the means and variances are identified.
- Augmented Dickey Fuller tests with a conventional linear regression model support the presence of a unit root in price levels.
- Allowing for Markov switching in coefficients and variances, the unit-root null is rejected in favor of stationarity.

## INTRODUCTION

Rice is a staple food for nearly half of the world's population. Given the significance of the world's rice markets, the behavior of rice prices is a topic of a large volume of international trade literature, particularly in case studies of emerging markets (e.g., Lee and Valera, 2016). Much research in this body of literature focuses on major rice exporting countries, with little attention given to rice importers. Of particular interest is the behavior of import rice prices over time, which have potential impacts on domestic prices as well as implications for trade policies.

Whether rice prices are characterized as stationary or non-stationary processes over time bears policy relevance particularly for many Asian countries, which constitute the world's largest rice markets. Those countries are also the world's largest rice importers. As for most developing countries, food security has been a priority for their governments, which have regularly intervened their domestic rice markets in an effort to stabilize prices for both consumers and farmers. For instance, Indonesia has maintained such programs through its government agency Badan Urusan Logistik (BULOG). Singapore's Ministry of Trade and Industry has controlled its domestic wholesale rice market through an import license policy. China and the Philippines have instituted trade restrictions aiming to insulate their domestic grain prices from spillovers of price spikes overseas (Dawe and Slayton, 2010). In Malaysia, Padiberas Nasional Berhad (BERNAS) is the country's sole rice importer that manages its domestic rice stock. The National Food Authority (NFA) of the Philippines has also frequently intervened its domestic rice market by setting price ceilings and providing subsidies to both consumers and farmers (Mariano and Giesecke, 2014; Mariano *et al.*, 2015; Yao *et al.*, 2007).

The time-series properties of rice prices are also important for market participants who engage in global rice trade based on their expectations of future price changes. If rice prices are characterized as non-stationary or random-walk processes, then even infrequent shocks or government interventions that affect the markets will have permanent effects, and the resulting price volatilities might grow without bounds in the long run. It is also impossible to forecast future movements of those prices based on their past behavior. On the contrary, if rice prices follow stationary processes even along broken trends, then any surges above the prices' historical trends will be followed by market forces that push these prices back to their historical paths. In this case, trade policies aiming at controlling domestic market prices might have short-lived effects.

The stochastic behavior of rice prices is the subject of a burgeoning literature. The vast majority of this literature shows evidence in support of non-stationarity or unit-roots in global rice

price data. For instance, using monthly export prices for the U.S. and Argentina, John (2014) provided evidence of nonstationarity based on the augmented Dickey Fuller (ADF) test. Chulaphan *et al.* (2013) showed collaborating evidence for the price levels of rice exports from Thailand, Vietnam, and the U.S. Ghoshray (2008), John (2013), Yovapolkul *et al.* (2006), and Warr (2008) also provided empirical findings in support of a unit root for both import and export prices of rice in a number of Asian countries, including Thailand, Vietnam, India, and Indonesia.

The common empirical methodology of the above studies draws on tests for unit roots originally developed by Dickey and Fuller (1979). Those standard unit-root tests are based on linear regression models that do not allow for occasional structural shifts as a form of nonlinearity. However, it is well known in the literature that economic and financial time series occasionally exhibit structural breaks associated with events such as financial crises or abrupt shifts in government policy. Perron (1989) argued that standard unit-root tests have low power against alternatives in the presence of structural breaks in the level or the growth trend. He dealt with this problem using dummy variables to account for possible structural breaks in the time series. Instead of an *a priori* known date for the structural break, Banerjee *et al.* (1992), and Zivot and Andrews (1992) applied unit-root tests against one *endogenously* determined structural break. Lee (1996), and Lumsdaine and Papell (1997) further extended the latter methodology to two or more structural breaks. However, Leybourne *et al.* (1998) showed that standard unit-root tests can also lead to *over-rejections* of the null if there is a structural break under the null hypothesis. Another drawback of such methodology is the pre-specified number of structural breaks.

Another class of literature deals with structural change or nonlinearities in time series by assuming different behavior in different subsamples or regimes. One type of regime-switching models allow the dynamics of a time series to be determined by an *observable* variable in the form of thresholds. An example is the threshold autoregressive model (van Dijk *et al.*, 2002). A similar framework instead characterizes regimes by an *unobservable* or latent stochastic process with a Markov structure. One advantage of the Markov switching approach is that it is straightforward to extend the original model for the conditional mean, as developed by Hamilton (1989), by allowing the unconditional variance of the time series to switch as well. In other words, the Markov switching model offers a rather general and convenient framework for the purpose of unit-root testing in the presence of *a priori* unknown multiple structural breaks due to either abrupt or gradual changes in the behavior of time series. Camacho (2005, 2011) and Camacho and Perez (2007) have used this model to analyze the stochastic trends of U.S. output series. As shown below, structural changes in both the mean and variance also play a vital role in the dynamic properties of historical rice prices.

The objective of this paper is to reexamine the stochastic property of rice price series for major rice importers in Asia. We contribute to the related literature by extending the conventional Dickey-Fuller-type regression model to a Markov switching framework, which describes discontinuous or sudden changes in the data generating process of a time series with a hidden Markov chain. The Markov switching model allows the rice price series to exhibit periodic shifts in their observed behavior between two different states or regimes. The features of the two states as well as their average durations are determined endogenously by the data. As a result, the unit-root test results allow for a switching behavior in the price series' levels as well as its variance.

Given the empirical results of our nonlinear regression models, this paper sheds new light on the stochastic property of the prices of a popular commodity in international trade. The rest of the paper proceeds as follows. The next section outlines the empirical methodology and describes the data. The third section presents the regression results and unit-root test statistics. The fourth section provides concluding observations.

## 2. METHODOLOGY AND DATA

### 2.1. Regression Models

This section outlines the empirical model that we employ to characterize the Asian rice price data. Let  $x_t$  be a rice price series. The conventional (linear) augmented Dickey Fuller (ADF) tests for a unit root in  $x_t$  can be conducted with the following autoregressive model:

$$\Delta x_t = \mu + \beta T + \rho x_{t-1} + \sum_{k=1}^{\infty} \delta \Delta x_{t-k} + \varepsilon_t, \quad (1)$$

where  $\Delta$  is a difference operator,  $\mu$  is a constant capturing the drifting behavior in the random walk,  $T$  represents a linear time trend, and  $\varepsilon_t$  is an iid residual term distributed as  $N(0, \sigma^2)$ . Because economic time series are typically plagued by serial correlation, the original Dickey-Fuller (1979) regression is augmented with the lagged dependent terms ( $\sum_{k=1}^{\infty} \delta \Delta x_{t-k}$ ). The null hypothesis of a unit root  $H_0: \rho = 0$  is tested against the alternative  $H_1: \rho < 0$ . Since the  $t$ -statistic ( $t_\rho$ ) for testing  $H_0$  does not have a standard distribution, MacKinnon's (1991) non-standard critical values will be used. If the unit-root hypothesis is rejected, then the results can be interpreted as evidence for the time series to follow a mean-reverting stationary process.

The above testing procedure is widely known for failing to account for the effects of structural breaks in the time series. Earlier attempts to overcome this drawback include augmenting the regression model (1) with the possibility of one or more *a priori* unknown structural breaks in the data-generating process (e.g., Perron, 1989; Banerjee, Lumsdaine and Stock, 1992; Zivot and Andrews, 1992; Lee, 1996; Lumsdaine and Papell, 1997). Those structural breaks are assumed to be the outcomes of mostly isolated, non-recurring events. Hall *et al.* (1999), however, show that the power of ADF tests can be improved by incorporating an unobserved Markov-switching (MS) variable that detects periodical changes in the time series' autoregressive process.

Following Hamilton (1989) and Hall *et al.* (1999), we consider nonlinear dynamics by incorporating a Markov-switching process in the ADF regression model. Let  $s_t \in \{1,2\}$  be an unobservable state variable of two regimes. The state variable  $s_t$  is governed by a discrete state Markov chain. The path that  $s_t$  follows from period  $t-1$  to period  $t$  is captured by a probability transition matrix with the following elements:

$$p_{ij} = \Pr(s_t = j | s_{t-1} = i) \quad \forall i, j = 1, 2, \quad (2)$$



which describes the probability of switching from state  $i$  to state  $j$ , such that  $\sum_{j=1} p_{ij} = 1 \forall i$ . The Markov switching representation for the time series  $x_t$  would then be expressed as:

$$\Delta x_t = \mu(s_t) + \beta(s_t)T + \rho(s_t)x_{t-1} + \sum_{k=1} \delta_k(s_t)\Delta x_{t-k} + \varepsilon_t. \quad (3)$$

All coefficients in equation (3) are allowed to switch according to the state variable,  $s_t$ . This Markov-switching framework can also be extended to the variance term as well (Kanas and Genius, 2005; Cevik et al., 2013). In this case, the residual term is assumed to be  $\varepsilon_t \sim N(0, \sigma^2(s_t))$ . This means that  $\sigma^2$  is allowed to switch according to a two-state, first-order Markov process governed by the state of  $s_t$ .

As suggested by Hamilton (1989) and Hall *et al.* (1999), equation (3) can be estimated using Hamilton's (1994) two-step EM algorithm. This algorithm involves an iterative procedure to obtain maximum-likelihood (ML) estimates for the parameters and transition probabilities governing the Markov process.

As for the linear model captured by equation (1), the unit-root test with the MS-ADF model of equation (3) can be based on the  $t_\rho$  statistic. However, since the distribution of  $t_\rho$  under the null hypothesis is unknown, we adopt Hall *et al.* (1999) and Cevik et al.'s (2013) approach by generating critical values using bootstrapping with 10,000 replications.

To determine which model specification performs the best in characterizing the rice price series, we employ a likelihood-ratio (LR) test, whose statistic can be expressed as:  $LR = 2[L_1 - L_2]$ , where  $L_i$  is the log-likelihood value of a particular model  $i$ . The LR test has a  $\chi^2$  distribution with the number of degrees of freedom equal to the number of restrictions. However, since the transition probabilities in Markov-switching models are not identified in the linear model, the LR test does not have the standard  $\chi^2$  distribution. In this case, we follow Cevik *et al.* (2013) and employ the upper-bound  $p$ -values as suggested by Davies (1987).

## 2.2 Data

Our empirical work involves monthly observations of prices of rice imports for six Asian economies—China, Hong Kong, Indonesia, Malaysia, Philippines, and Singapore—over the period between January 1995 and June 2015. The commodity belongs to the specific category of milled rice (i.e., semi-milled or wholly milled, whether or not polished or glazed). The import rice price data in U.S. dollars are obtained from the *Global Trade Atlas Navigator*. To adjust the commodity prices for inflation, we express the six price series in constant dollars by first dividing the individual rice series by their own countries' consumer price index (CPI). The CPI data are obtained from the *International Financial Statistics*. Since monthly data might exhibit seasonal behavior that is beyond the focus of our study, we applied U.S. Census Bureau's X-12-ARIMA seasonal adjustment program to the time series. For estimation, the seasonally-adjusted data

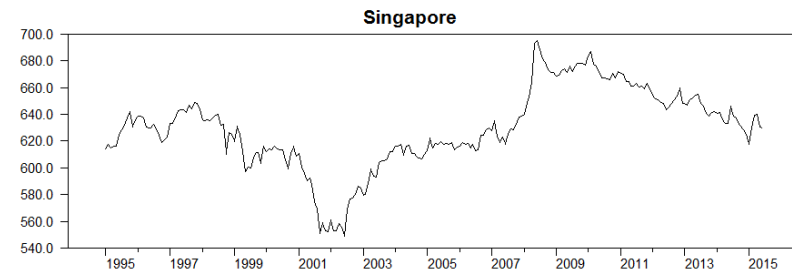
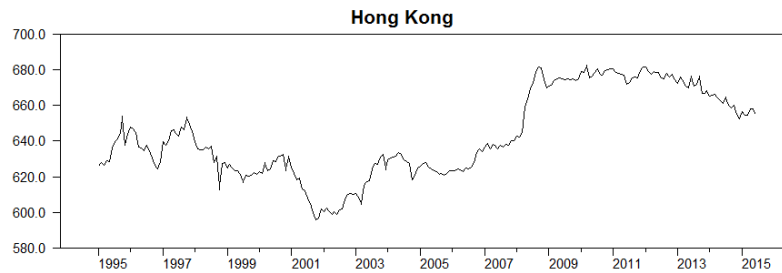
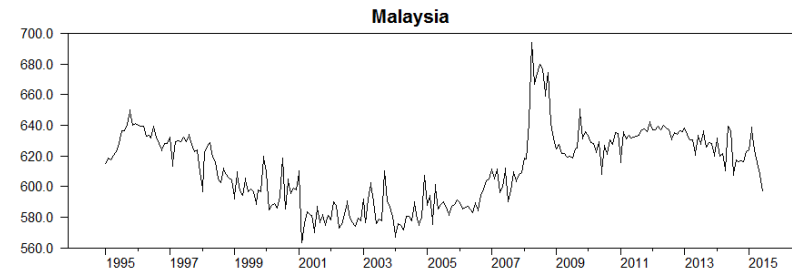
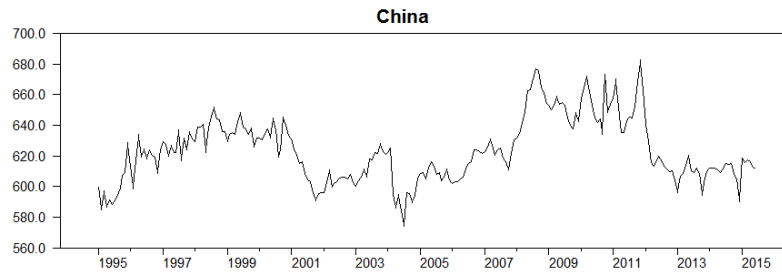
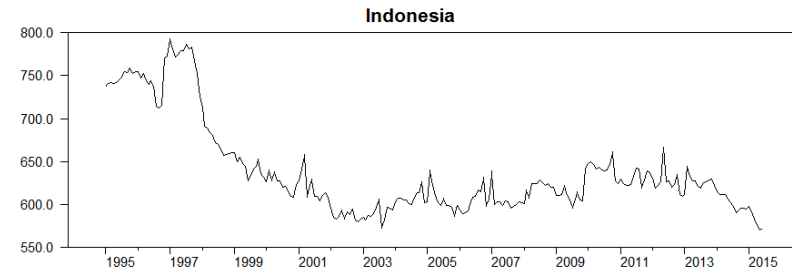
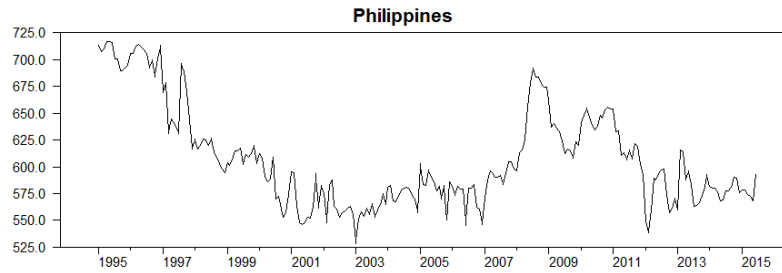
representing the variable  $x_t$  are 100 times the log values of the six individual import rice price levels.<sup>2</sup>

Figure 1 shows the patterns of the six individual rice price series. At first glance, the behavior of the import rice price levels varies appreciably across markets as well as over time. In particular, Hong Kong and Singapore experienced relatively less volatility in rice prices than other Asian countries. Together with Malaysia, those two city-states experienced a sudden jump in rice prices during the Asian rice crisis of 2007-2008. The Philippines and China also witnessed corresponding price surges in 2008, but their prices also exhibited similar volatility patterns in other periods. Between October 2007 and April 2008, global rice prices tripled. Some observers argued that the rice export restrictions by India and Vietnam in 2007, followed by the Philippines' rice import tenders for Vietnamese rice imports in 2008 resulted in the surges in the world's rice prices along with high volatility during that rice "crisis" episode (Lee and Valera, 2016).

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<sup>2</sup> The seasonality issue was pointed out by one journal reviewer. Despite changes in production between harvesting season and planting season, our rice price data do not exhibit discernible seasonal patterns. As such, using the original non-seasonally-adjusted data instead does not alter most estimation results reported in this paper.

**Figure 1: Import Rice Price Levels.**



The effects of the Asian financial crisis in 1997 are also apparent. While Indonesia's rice market appeared to be less subjected to the 2007-2008 price shocks, the prices of its rice imports in constant dollars surged in 1997 before falling below the pre-1995 levels the following year partly due to currency depreciation and high inflation. The currency exchange values for the Philippines, Indonesia and Malaysian depreciated dramatically during the Asian financial crisis, with the Indonesian rupiah affected the most. Indonesia responded to the soaring import rice prices in 1998 with several market operation policy measures and subsidization under its RASKIN program, along with an open import policy (Dawe and Slayton, 2010). Meanwhile, the agricultural policy of Malaysia had shifted toward the production of high-value crops along with industrialization. This policy shift helped contribute to a nearly 30% increase in Malaysia's rice imports between 1997 and 1998 (Daño and Samonte, 2005). Except for China, the rice prices around Asia trended down after the Asian financial crisis until 2001, and then rose gradually through the depths of the Great Recession in 2009.

One notable observation stands out from Figure 1: The Asian regional rice market underwent periods of relative tranquility interrupted only by shocks that inflicted high price volatility. The price levels of those regional rice markets responded in varying degrees to the Asian financial crisis of 1997-1998 and later the rice crisis in 2007-2008, and subsequently the global recession in the aftermath of the U.S. financial meltdown. Some market responses were obviously drastic while others seemed rather gradual or modest. In addition, the extent of volatility differed not only across markets but also between various time periods.

### 3. EMPIRICAL RESULTS

This section describes our findings on the stochastic property of the Asian rice price series with the alternative models outlined in Section 2 above. Table 1 shows the estimation results for the linear, or non-switching, ADF regression model captured by equation (1). In preliminary regressions, the coefficient estimates ( $\beta$ 's) for the linear time trend are not statistically significant in most cases. Since omitting the trend variable  $T$  also does not meaningfully alter the estimates for other explanatory variables, all reported regression results do not include this term. The autoregressive order  $k$  is determined by the Akaike Information Criterion (AIC). As shown in Table 1, one lag value is included for four of the six data series. For the price series of Hong Kong and Indonesia, three lag values are included.

**Table 1:** Linear ADF Regression Model Regression.

	<u>Philippines</u>		<u>China</u>		<u>Hong Kong</u>		<u>Indonesia</u>		<u>Malaysia</u>		<u>Singapore</u>	
$\mu$	36.07	*	47.97	*	14.28	***	21.20	***	43.40	*	11.21	**
	(2.53)		(3.01)		(1.77)		(1.65)		(2.54)		(2.27)	
$\rho$	-0.08		-0.06		-0.10		-0.15	*	-0.31	**	0.04	
	(1.24)		(0.99)		(1.50)		(2.31)		(2.05)		(0.43)	
$\sum_{k=1} \delta_k$	-0.06		-0.08		0.21		-0.14		-0.07		-0.02	
Lag order $k$	1		1		3		3		1		1	
$\sigma^2$	192.74		64.05		13.64		125.94		112.48		38.62	
Likelihood value	-982.04		-848.19		-656.54		-925.48		-914.10		-775.33	
ADF- $t_\rho$	-1.24		-0.99		-1.50		-2.31		-2.05		-0.43	

Notes: Absolute values of  $t$ -statistics are in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

The bottom row of Table 1 lists the conventional ADF- $t_\rho$  statistics for testing the null hypothesis of a unit root. The unit-root null cannot be rejected for the data of all six time series over the period 1995-2015. The estimates for the constant term  $\mu$  are statistically significant, meaning that rice price levels follow a random walk with drift. Evidence in support of the unit-root, or I(1), process corroborates with earlier findings for some Asian domestic rice price series (e.g. Imai et al., 2008; Rapsomanikis, 2011; Alam et al., 2012; Chulaphan et al., 2013).

If structural breaks exist in the observed data series, then the ADF test results with the linear regression model of equation (1) might be misleading. As evident in Figure 1, an upward level shift occurred in 2008 for the majority of the price series except perhaps for Indonesia, which instead experienced sudden downward shifts a decade earlier in 1998. Similarly, the variability of some price series, notably for China and the Philippines, also appears to evolve across the observation period. To explore the possibility of structural breaks in regressions, Table 2 shows the results of two Chow-type stability tests with *a priori* unknown break points, namely Andrews and Ploberger's (1994) *Sup-F* and *Mean-F*. The two statistics are computed for the price series by testing alternatively for constancy in all coefficients in equation (1) and for constancy in the variance of its residuals.

**Table 2:** Tests for Structural Breaks.

	<u>Philippines</u>		<u>China</u>		<u>Hong Kong</u>		<u>Indonesia</u>		<u>Malaysia</u>		<u>Singapore</u>	
<b>All Coefficients:</b>												
<i>Sup-F</i>	13.63	**	10.51	**	14.27	**	14.26	**	12.15	**	12.32	**
Date	2007:01		2010:06		2008:12		1998:08		2007:08		2002:06	
<i>Mean-F</i>	4.18	**	2.83	***	5.24	**	5.33	**	3.78	**	3.32	***
<b>Variance:</b>												
<i>Sup-F</i>	8.13	***	7.10	***	4.61		7.13	***	7.66	***	2.46	
Date	2002:05		2012:03		2001:12		2012:06		2008:12		2002:08	
<i>Mean-F</i>	1.19		1.39		1.88		2.04		1.31		0.78	

Notes: \*\* and \*\*\* denote statistical significance at the 5%, and 10% levels, respectively.

The top panel of Table 2 shows the *Sup-F* and *Mean-F* statistics for constancy in coefficient estimates. The null hypothesis of constancy is rejected for most series, meaning that their regressions are subject to structural instability, particularly abrupt shifts in model parameters. The dates associated with the *Sup-F* statistics further indicate that the majority of structural breaks are associated with the Asian rice crisis of 2007-2008 that apparently exhibited rather lasting effects on price levels as well as their volatility. The identified break for Indonesia reflects its macroeconomy facing high inflation and currency depreciation in 1998.

The bottom panel of Table 2 shows the corresponding test statistics for constancy in variances. The *Sup-F* statistics indicate that the variance of residuals is not constant over time for four markets, namely the Philippines, China, Indonesia, and Malaysia. In contrast to their corresponding results for coefficients, the *Sup-F* statistics for Hong Kong and Singapore are not statistically significant, neither are their *Mean-F* statistics. The latter findings are consistent with the casual observations of their historical data in Figure 1, which exhibit least volatility by comparison.

The overall results in Table 2 provide motivation for extending the conventional ADF test to a Markov switching framework, as characterized by equation (3). For illustration purposes, we report regression results for three specific model specifications. In the first case, only the constant term  $\mu$  is allowed to exhibit Markov switching behavior with two states. This captures the possibility of level shifts in the regression model. The second case allows for Markov switching behavior in the residual's variance in addition to the constant term. In the third case, all coefficients and the residual's variance in the regression model (3) follow the two-state Markov switching process.

Table 3 shows the estimation results of the ADF regression model with a Markov switching constant term. For all of the six price series, the estimate for the constant term is noticeably higher in state two ( $s=2$ ) than in state one ( $s=1$ ). The sizes of the coefficient estimates ( $\mu$ 's) in both states also differ appreciably from their corresponding estimates in Table 1. The point estimates for  $\rho$ , however, remain quite similar between the two models.

**Table 3:** Regression with Markov-Switching Constant.

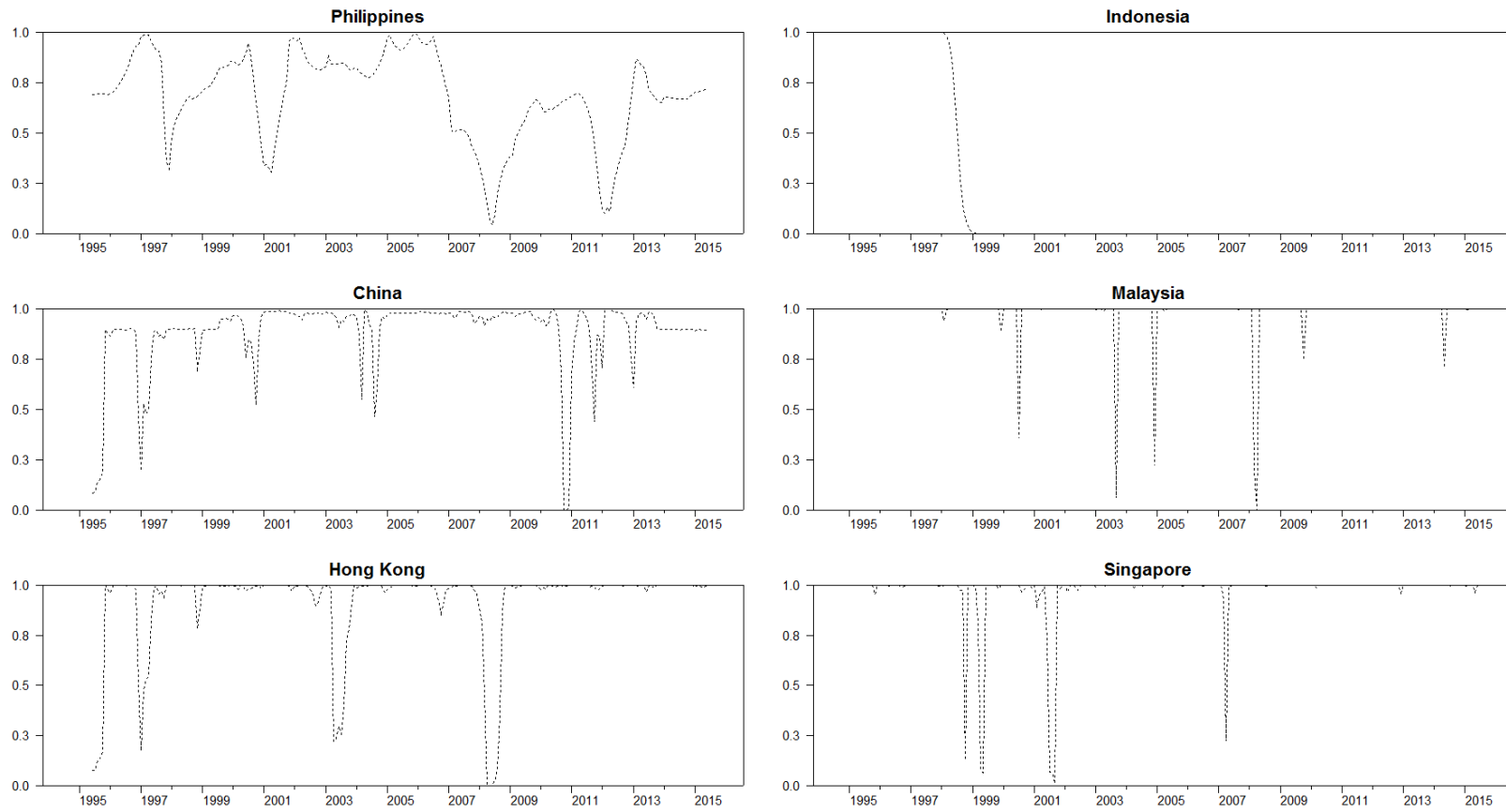
	Philippines		China		Hong Kong		Indonesia		Malaysia		Singapore	
$\mu (s = 1)$	-0.02		-0.54		0.25	*	1.42	***	0.63	***	0.24	*
	(1.50)		(1.21)		(2.60)		(1.87)		(1.65)		(4.70)	
$\mu (s = 2)$	41.18	*	53.03	*	28.58	*	27.27	*	63.83	*	20.04	*
	(46.09)		(25.76)		(3.23)		(21.15)		(34.68)		(31.81)	
$\rho$	-0.08	***	-0.06	***	0.14	*	-0.25	*	-0.31	***	0.04	*
	(1.86)		(1.68)		(2.99)		(2.59)		(1.65)		(3.44)	
$\sum_{k=1} \delta_k$	-0.58		-0.66		0.01		-0.48		-0.27		-0.03	
Lag order $k$	1		1		3		3		1		1	
$\sigma^2$	190.79		63.20		11.33		123.34		111.20		29.02	
$p_{11}$	0.72	**	0.91	*	0.97	*	0.03	*	0.94	**	0.98	*
	(2.05)		(2.85)		(5.10)		(3.10)		(2.22)		(9.32)	
$p_{12}$	0.11		0.35		0.27	***	0.56	**	0.65		0.02	**
	(0.05)		(0.30)		(1.73)		(2.10)		(1.23)		(2.26)	
Likelihood value	-967.37		-841.60		-644.67		-915.06		-887.43		-756.25	
ADF- $t_\rho$	-1.86		-1.68		-2.99	***	-2.59		-1.65		-3.44	**
LR test vs. linear model	29.34	*	13.20	**	23.73	*	20.83	*	53.34	*	38.17	*

Notes: Absolute values of  $t$ -statistics are in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

When the regression allows for Markov switching in the constant term to capture the switching behavior in means, the ADF- $t_\rho$  statistics show evidence of stationarity in the levels of the Singaporean and Hong Kong data. As for results with the standard unit-root regression model (Table 1), the unit-root null cannot be rejected for the other four data series. Nevertheless, the model with Markov switching in the constant term seems to provide a better characterization of all six price series than the linear regression model does. The bottom row of Table 3 shows the LR test statistics essentially for testing the restriction that the constant term is the same between two states. All statistics are in favor of the Markov switching model specification. Moreover, the estimate of variance  $\sigma^2$  is also appreciably lower in most cases relative to the corresponding estimates from the linear model.

Table 3 also displays estimates for the probability of state one,  $p_{11}$ , and the transition probability,  $p_{12}$ . The results suggest that the probability of staying in one state is especially high for Singapore and Hong Kong. Those estimates are further confirmed by the plots of smoothed probability of state one ( $s=1$ ) in Figure 2. Evidence of few regime shifts particularly for Singapore highlights the impact of its historical import license policy for the country's wholesale rice market (Tobias *et al.*, 2012). In the case of Hong Kong, which is a major importer of Hom Mali rice from Thailand, the evidence of few regime shifts reflects its import license policy under the Rice Control Scheme that aims to maintain a buffer stock of rice for domestic consumption (Tobias *et al.*, 2012).

**Figure 2:** Probability of State 1 for Markov-Switching Constant.





Indonesia has also maintained an intervention program aiming to insulate its domestic market from sudden price spikes overseas. The plot of its probability series is dominated by a single dramatic shift, which captures the impact of its economic turmoil in 1998. After steep declines during the late 1990s due in part to historically high inflation reaching 80% in 1998, Indonesia's import rice price in constant dollars stabilized with a gradual uptrend during much of the next decade.

Evidence of sudden regime shifts in Figure 2 reflects, among other things, the impact of developments within the broader region of Asia as well as macroeconomic conditions that exerted varying impacts on individual countries' inflation rates as well as their currency values. For the Philippines, Hong Kong, Singapore and Malaysia, the patterns of smoothed probability series clearly show an abrupt but temporary shift in association with the Asian rice crisis of 2007-2008.

The probability series appears to be least persistent for the Philippines, meaning that this largest rice importer in the world has been subject to most frequent regime shifts by comparison. Dawe and Slayton (2010) pointed out that, despite its various intervention programs, the Philippines did not prove to be effective in preventing its domestic rice market from spillovers of developments in the world market, especially during the rice crisis of 2007-2008.

The second model specification that we consider is Markov switching in the variance of the residual term in addition to the constant term. The estimation results are displayed in Table 4. Except for Hong Kong, the  $\chi^2$  statistics for equal variances show strong evidence in support of heterogeneity in variance (i.e., heteroskasticity) over time. Compared with the previous unit-root test results (Tables 1 and 3), the ADF- $t_\rho$  statistics show stronger evidence of stationarity in the price level data. Except for China, the unit-root null hypothesis is rejected at the 10% significance level or higher.

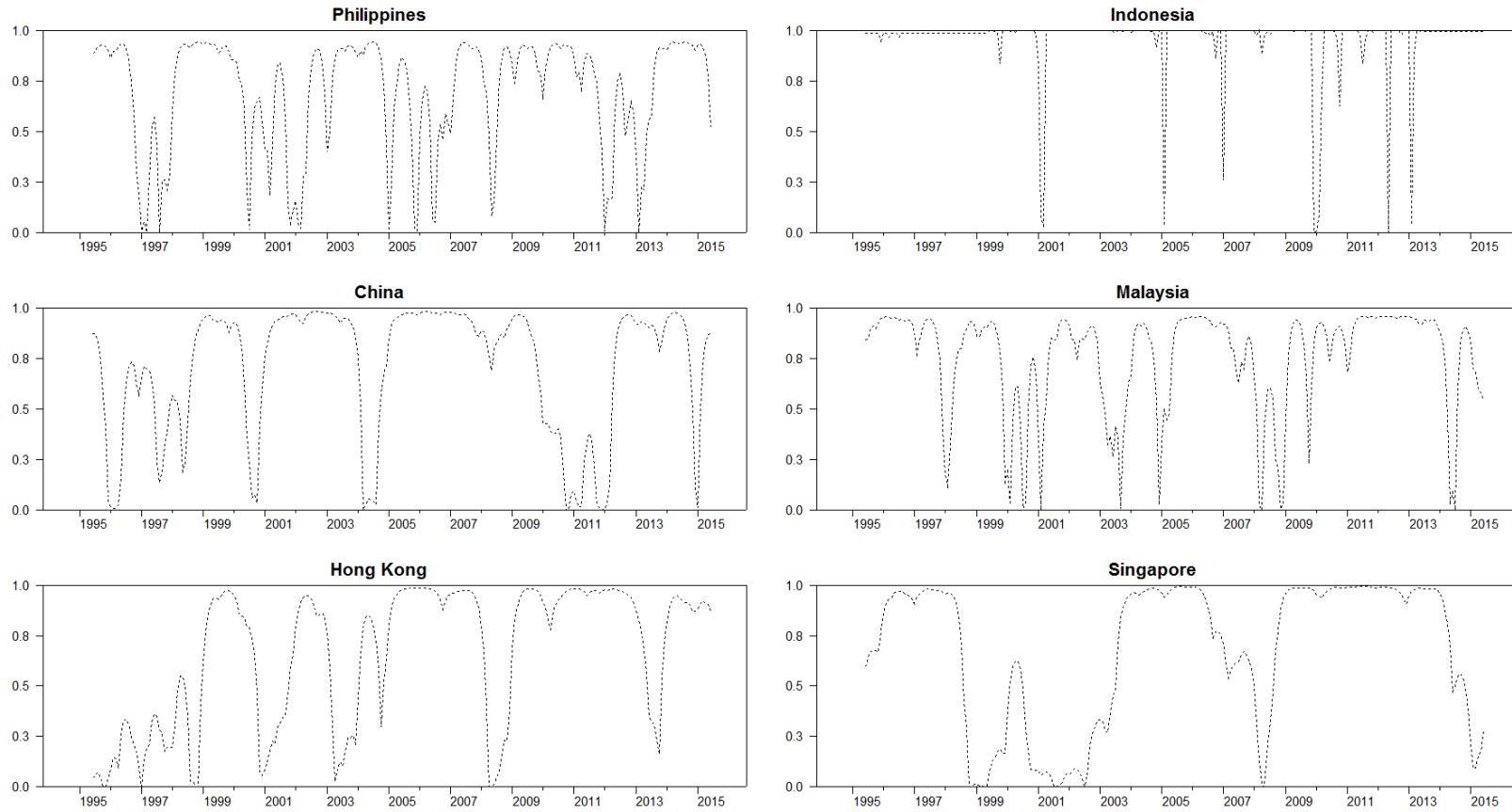
**Table 4:** Regression with Markov-Switching Constant and Variance.

	<b>Philippines</b>		<b>China</b>		<b>Hong Kong</b>		<b>Indonesia</b>		<b>Malaysia</b>		<b>Singapore</b>	
$\mu (s = 1)$	0.01		0.17		0.04	*	0.51	**	-0.06		0.03	*
	(1.59)		(1.61)		(2.33)		(1.97)		(1.31)		(1.67)	
$\mu (s = 2)$	48.12	**	52.67	*	10.74	**	32.21	*	54.63	**	35.17	***
	(40.42)		(34.96)		(2.10)		(61.26)		(1.98)		(1.81)	
$\rho$	-0.06	*	-0.05	*	-0.09	*	-0.48	*	-0.38	*	0.03	*
	(2.94)		(2.75)		(2.98)		(3.16)		(5.97)		(3.43)	
$\sum_{k=1} \delta_k$	0.01		0.28		-0.17		-0.76		-0.50		-0.20	
Lag order $k$	1		1		3		3		1		1	
$\sigma^2 (s = 1)$	96.37	***	32.03	*	6.82	*	62.97	*	56.24	*	19.31	*
	(1.97)		(4.32)		(6.77)		(4.41)		(4.81)		(7.65)	
$\sigma^2 (s = 2)$	209.61	*	61.54	*	11.94	*	143.68	*	101.22	*	26.38	*
	(19.70)		(10.03)		(7.32)		(10.59)		(10.40)		(9.21)	
$p_{11}$	0.50	*	0.53		0.87	*	0.93	*	0.91	*	0.87	*
	(11.98)		(0.24)		(37.35)		(3.05)		(19.19)		(39.18)	
$p_{12}$	0.27		0.14	***	0.11		0.11		0.28	***	0.07	
	(0.46)		(1.92)		(1.46)		(0.13)		(1.73)		(1.22)	
Likelihood value	-950.37	***	-826.10		-633.57		-900.44		-820.18		-720.43	
ADF- $t_\rho$	-2.94	***	-2.75		-2.98	***	-3.16	**	-5.97	*	-3.43	**
$\chi^2$ test for equal variances	15.25	*	15.58	*	2.08		22.15	*	19.56	*	8.29	*
LR test vs. linear model	63.34	*	44.19	*	45.94	*	50.07	*	187.84	*	109.80	*
LR test vs. MS constant	34.00	*	31.00	*	22.21	*	29.25	*	134.50	*	71.63	*

Notes: Absolute values of  $t$ -statistics are in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

The estimates for the probability of state one,  $p_{11}$ , are close to one for Indonesia. This relatively high point estimate implies a longer average duration of that state, which corresponds to a relatively lower conditional mean and smaller variance for the Indonesian price series. Corroborating evidence can be observed in Figure 3, which plots the smoothed probabilities of state one over the observation period. The plots essentially reveal the extent of volatility changes in addition to level shifts. In Figure 3, the durations of being close to state one vary remarkably across the six markets. Indonesia shows the most persistence in high probability for being in state one, while the Philippines and Malaysia appear to show most variability in their probability series. Those patterns reflect the timing of level shifts in the prices series as well as changes in their volatility due in part to developments in the world or domestic economies. As the estimates for  $\sigma^2(s)$  in Table 4 suggest, state one corresponds to a lower variance for all six markets, particularly during the first half of 2000s when those economies experienced relatively low overall inflation as they continued to recover from the turmoil during financial crisis of 1997-1998.

**Figure 3:** Probability of State 1 for Markov-Switching Constant and Variance.



The next model specification is the full version of the Markov switching model as represented by equation (3), which allows for Markov-switching behavior in all coefficients as well as the variance of the residual term. Table 5 displays the estimation results. Apparently, estimates from this model differ appreciably from those of the previous two model specifications. In particular, the differences between the constant term's two states are remarkably larger. Higher estimates can also be realized for the variance in the second state, i.e.,  $\sigma^2(s = 2)$ , than in the first state. The  $\chi^2$  statistics for testing equal variances further confirm the extent of heterogeneity in the variance of most price series except for Hong Kong.

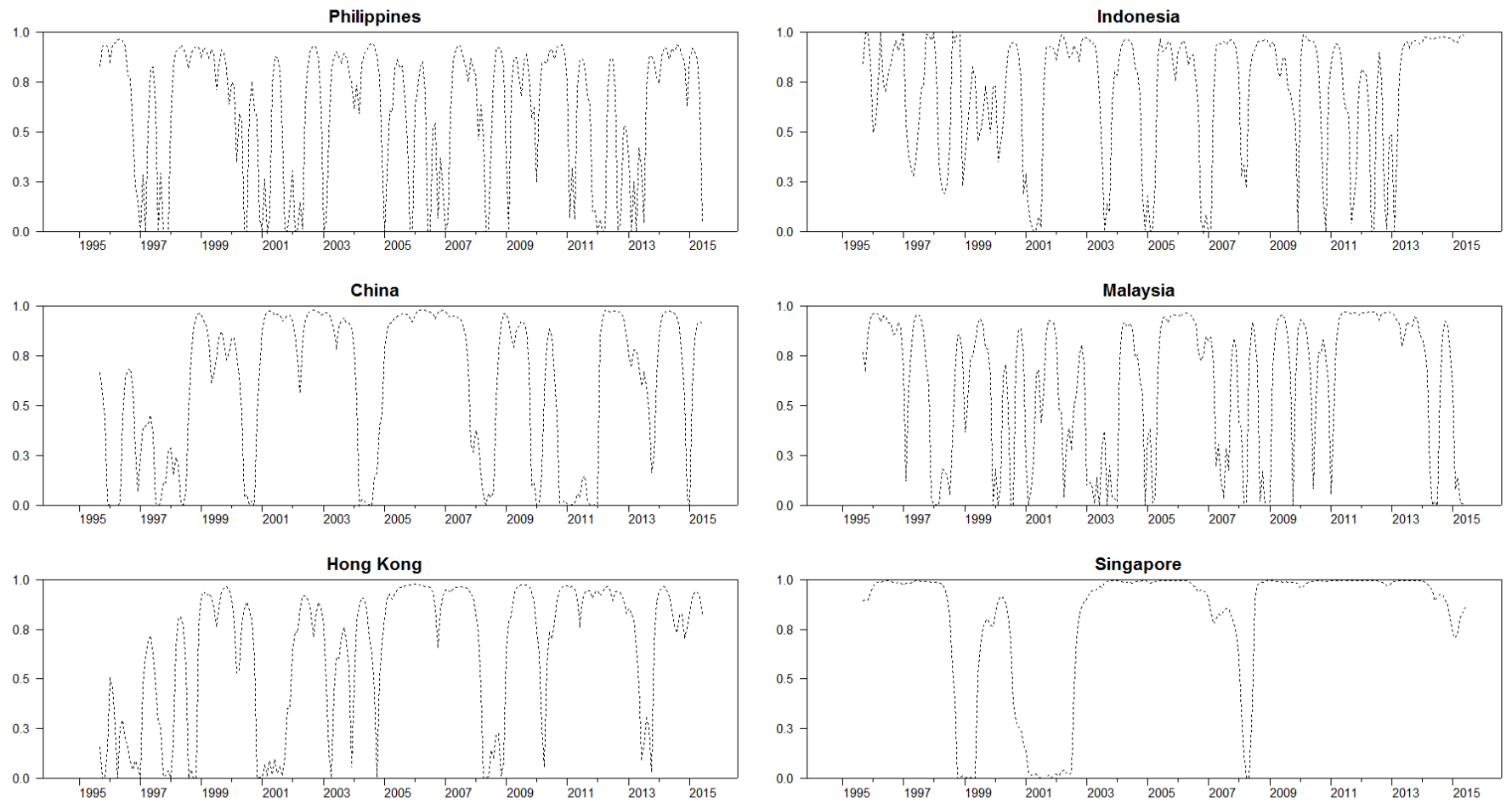
**Table 5:** Regression with Markov-Switching Coefficients and Variance.

	<u>Philippines</u>		<u>China</u>		<u>Hong Kong</u>		<u>Indonesia</u>		<u>Malaysia</u>		<u>Singapore</u>	
$\mu (s = 1)$	0.08		0.24	**	-0.07		-0.48		2.54	*	4.15	
	(1.18)		(2.03)		(0.57)		(1.39)		(2.48)		(1.19)	
$\mu (s = 2)$	76.14	**	59.96	*	11.75	*	32.37	**	23.63		49.80	**
	(2.17)		(35.08)		(2.58)		(2.63)		(0.18)		(2.23)	
$\rho (s = 1)$	-0.88	**	-1.06	*	-0.26	*	0.03	*	-0.52	*	-0.81	*
	(3.19)		(3.08)		(3.49)		(3.96)		(4.63)		(3.83)	
$\rho (s = 2)$	-0.06		0.06		-0.14		-0.04		-0.43		0.18	
	(0.48)		(0.74)		(1.03)		(0.31)		(0.78)		(1.36)	
$\delta_1 (s = 1)$	0.06		0.09		-0.05		0.03		-0.09		0.03	**
	(0.98)		(1.04)		(0.57)		(0.42)		(1.36)		(2.29)	
$\delta_1 (s = 2)$	-0.02	**	-0.26	***	0.22	**	-0.56	*	-0.14	***	-0.07	
	(2.18)		(1.93)		(2.32)		(2.55)		(1.78)		(0.49)	
$\delta_2 (s = 1)$					0.18	***	-0.16					
					(1.84)		(0.84)					
$\delta_2 (s = 2)$					0.06		-0.06	*				
					(0.28)		(1.06)					
$\delta_3 (s = 1)$					-0.01	*	-0.25	***				
					(2.46)		(1.92)					
$\delta_3 (s = 2)$					-0.02		-0.05	***				
					(0.61)		(1.68)					
$\sigma^2 (s = 1)$	43.77	*	19.01	*	4.26	*	31.52	*	19.14	*	12.46	*
	(5.37)		(5.31)		(5.95)		(4.40)		(4.41)		(3.41)	
$\sigma^2 (s = 2)$	406.78	*	121.21	*	28.48	*	213.59	*	245.34	*	56.03	**
	(5.55)		(5.32)		(5.14)		(4.06)		(4.86)		(4.94)	
$p_{11}$	0.67	*	0.74	*	0.75	*	0.68	***	0.83	**	0.84	*
	(3.22)		(3.66)		(3.17)		(1.78)		(1.99)		(4.44)	
$p_{12}$	0.54	***	0.26	*	0.34		0.47	**	0.34	*	0.24	
	(1.73)		(4.69)		(1.56)		(4.58)		(3.75)		(3.21)	
Likelihood value	-935.24		-806.07		-621.66		-699.14		-700.69		-595.90	
ADF- $t_\rho (s = 1)$	-3.19	**	-3.08	**	-3.49	**	-3.96	**	-4.63	*	-3.83	**
ADF- $t_\rho (s = 2)$	-0.48		-0.74		-1.03		-0.31		-0.78		-1.36	
$\chi^2$ test for equal variances	19.24	*	14.72	*	2.77		18.84	*	18.60	*	8.27	*
LR test vs. linear model	93.59	*	84.25	*	69.77	*	452.68	*	426.82	*	358.86	*
LR test vs. MS constant	64.26	*	71.05	*	46.03	*	431.85	*	373.48	*	320.69	*
LR test vs. MS constant + variance	30.26	*	40.05	*	23.82	*	402.61	*	238.98	*	249.06	*

Notes: Absolute values of  $t$ -statistics are in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 1%, 5%, and 10% levels, respectively

Figure 4 plots the corresponding estimates for the smoothed probability of state one,  $p_{11}$ , over the observation period. Compared to the plots generated by the preceding MS model specifications, those series are less persistent across the observation period as a result of the consideration of possible regime switches in all coefficients in the model as well as its variance. For all price series, state one ( $s=1$ ) corresponds to smaller estimates for both the constant and variance, i.e., lower growth in price levels along with less market volatility. Major deviations from that state coincide with the Asian financial crisis of 1997-1998 and the rice crisis a decade later.

**Figure 4:** Probability of State 1 for Markov-Switching Coefficients and Variance.



In comparison with other models, evidence of stationarity in the rice price series is stronger in this Markov switching model specification. Based on the ADF- $t_\rho$  tests, the null hypothesis is rejected in favor of stationarity for all price series during state one ( $s=1$ ). For state two ( $s=2$ ), however, the null hypothesis cannot be rejected for any series. As the average duration of state one is longer than the average duration of state two for all six price series, the test results essentially suggest that the rice price data are dominated by a stationary as opposed to unit-root process over the observation period.

The bottom three rows of Table 4 display results of LR tests for this version of the MS model against the preceding three model specifications. All test statistics are statistically significant at the 1% level. Those test results suggest that this particular nonlinear model specification, which allows for state-dependent coefficients and variance, characterizes the dynamic behavior of Asian rice prices better than the linear model as well as all other variants of the MS model.

#### 4. CONCLUSION

Accurate characterization of the time-series properties of rice prices is crucial for performing rice market forecasts and trade policy analyses. If their data-generating process contains a unit root, then stochastic innovations would have a permanent effect on the levels of the series; otherwise, the effects might be short-lived. To this end, we have applied the ADF tests to six Asian import rice price series with a linear, non-switching regression model as well as three alternative Markov-switching model specifications. In line with the consensus in the empirical literature concerning the stochastic property of commodity prices, there is scant evidence against the unit-root null from our linear model regressions. When the autoregressive process and the unconditional variance are allowed to follow a Markov-switching process with two states, however, the ADF statistics provide strong evidence in favor of stationarity among the six price series over the majority of the observation period between 1995 and 2015.

For the six price series in our sample, which includes the world's largest rice importers, the nonlinear model with Markov-switching in both the coefficients and variance provides the best characterization. According to our model estimation results, those time series are stationary for at least some subperiods, and occasional shocks might have temporarily altered their data-generating processes. When market prices are best characterized by nonlinear, Markov-switching processes, trading strategies and international trade policies should differ from the cases in which the market prices either follow a random walk or continue to evolve around an unbroken trend.

Essentially, we have found strong empirical evidence to support that the world's prices of rice imports have been largely affected by long-run economic fundamentals as opposed to temporal shocks or policy interventions. This bears implications for the way policymakers evaluate the efficacy of government policy responses (e.g., Martin and Anderson, 2012) to a given shock to the world rice market that may not likely manifest itself as a permanent shift in market prices.



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# Consumption Convergence in Emerging Markets

ABU N. M. WAHEEDUZZAMAN<sup>1</sup>

*College of Business, Texas A&M University-Corpus Christi  
Corpus Christi, Texas, USA*

*The study examines consumption convergence between 20 developed and 25 emerging markets over 25 years (1990-2014). The specific objectives of study are to (i) define consumption convergence (ii) develop models explaining the phenomenon, (iii) test the level of convergence among developed and emerging nations, and (iv) determine the influence of socioeconomic variables on consumption convergence in emerging nations. The study also discusses managerial and social implications.*

*Six variables representing the consumption are daily calories intake, daily protein intake, expenditure on milk, egg, cheese, and personal care, and household possession of dishwashers and microwaves. Consumption growth and convergence is examined with three types of regression models: time growth, trend difference, and socioeconomic influence.*

*Findings reveal that emerging markets are catching up with developed markets but the rate of convergence is slow. Socioeconomic factor analytic model indicates that increase in market openness and quality of life, size, and manufacturing significantly contribute to consumption convergence. Information gained from the study would be useful to social policy planners understand the evolutionary growth of a nation/society, and, accordingly determine social policy goals. Business managers can use the models in demand estimation, forecasting, market penetration, and segmentation/positioning.*

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<sup>1</sup> Address correspondence to Abu N. M. Waheeduzzaman, Professor of Marketing and International Business, College of Business, OCNR 319, Unit 5808, Texas A&M University-Corpus Christi, Corpus Christi, Texas 78412, USA.  
E-mail: [waheed@tamucc.edu](mailto:waheed@tamucc.edu), [abu.waheeduzzaman@gmail.com](mailto:abu.waheeduzzaman@gmail.com)

# Estimating Trade Misinvoicing from Bilateral Trade Statistics: The Devil is in the Details

KEEJAE P. HONG

*Belk College of Business, University of North Carolina at Charlotte  
Charlotte, North Carolina, USA*

SIMON J. PAK<sup>1</sup>

*School of Graduate Professional Studies, Penn State University  
Malvern, Pennsylvania, USA*

*To measure trade misinvoicing in an attempt to estimate a country's illicit financial flows, the partner-country trade data comparison method, or the P-C method, has been most widely used since Bhagwati (1964). However, the P-C method requires a critical assumption that the trade statistics in partner countries are accurate enough to be substituted for market values. In this study we analytically and empirically show the assumption of no misinvoicing in partner countries cannot be supported even for the advanced economies, raising serious doubt on the reliability of the P-C method and a possibility that inappropriate policy decisions may be made based on the erroneous estimates of trade misinvoicing. We, briefly, comment on the price-filter method as an alternative way to estimate a country's amount of trade misinvoicing.*

**KEYWORDS** *Trade Misinvoicing, Faked Invoicing, Illicit Financial Flows, Partner-Country Method*

**JFL CLASSIFICATION** *F10, F14*

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<sup>1</sup> Address correspondence to Simon J. Pak, Associate Professor of Finance, School of Graduate Professional Studies, Penn State University, 30 E. Swedesford Rd., Malvern, Pennsylvania 19355, USA. President, Trade Research Institute, Inc. E-mail: [SimonPak@psu.edu](mailto:SimonPak@psu.edu)

# Is China and the United States in a Competitive Zero-Sum Economic Game?

STEPHEN W. HARTMAN<sup>1</sup>

*School of Management, New York Institute of Technology  
Old Westbury, New York, USA*

PETER WHOOLEY

*New York Institute of Technology  
Old Westbury, New York, USA*

*The enormous economic success of China since the death of Mao Zedong in 1976 occurred by implementing a model of state capitalism while the tremendous growth of the United States in the same time period occurred using an economic liberalism model. The U.S. has a market-driven economy that has grown into an innovative and technologically advanced industrialized economy. China has employed a state capitalism model to a degree unlike any other country, though this model of state capitalism is increasingly being used in countries such as Russia, South Africa, and Brazil.*

*While China has achieved tremendous economic success, there is striking evidence that state-owned companies are not only less innovative, but also less productive than their private competitors. Nonetheless China's control pattern of free-market competition, experimentation, and innovation has been amazingly successful for the growth of their economy. China and the United States are not competitors playing a zero-sum game where one loses and the other wins. Rather the dynamic between the American and Chinese economies continues to develop into more of a mature relationship than an outright competition.*

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<sup>1</sup> Address correspondence to Stephen W. Hartman, Ph.D., Professor, School of Management, New York Institute of Technology, Old Westbury, New York, USA. E-mail: [shartman@nyit.edu](mailto:shartman@nyit.edu)

## HYPOTHESIS

China's economic success vs. that of the United States is based in part on the concepts of state capitalism vs. economic liberalism respectively. The enormous economic success of China since the death of Mao Zedong in 1976 occurred by implementing a state capitalism model, while the tremendous growth of the United States in the same time period occurred using an economic liberalism model. While the two economic models appear to be competitive and exclusionary, the reality is these two economic models have resulted in a growing relationship between China and the United States as a result of strengthened international trade.

## INTRODUCTION

For centuries China's economy maintained an insular and closed network that prevented foreign investment and resisted globalization. In 1978 Deng Xiaoping, the leader of China, visited Singapore and, learning from Singapore's success and evolution into a global trading and economic hub, recognized that China also needed to open itself up to international trade, secure vast supplies of natural resources, and develop its economy to remain relevant on a global stage. Xiaoping's trip resulted in kick starting several decades' worth of unprecedented economic growth in China. Xiaoping began the process of selectively opening China's borders, incentivizing foreign investment, and slowly began to capitalize on a population of over 1.3 billion people to fuel production and consumption. As China continues to develop into an economic superpower, a strong economic and trade foundation is developing between China and the United States. Each nation has learned to utilize their comparative cultural advantages and large population bases for trade and consumption, while employing their respective work ethics and business skills effectively to fuel further economic growth and prosperity. Although both countries continue to strengthen their industries and provide resources for their people, many differences remain regarding national approaches towards how each respective economy grows.

## BY THE NUMBERS:

The United States has a population of 314.2 million people with a \$15.7 trillion GDP that has grown at an average annual rate over the last ten years of 2-3% ("United States," 2015). China, on the other hand, is a much more populous country with a population of 1.4 billion people producing a \$12.4 trillion GDP with an economy that has grown at an average annual rate of nearly 10% for the last several decades although it slowed to 7.4% in 2014 ("China," 2015). While China's GDP has been approaching that of the United States, the U.S. maintains its position as the most technologically powerful economy in the world.

## THE U.S. AND CHINESE ECONOMIES

The U.S. has a market-driven economy that has, over the years, grown into an innovative and technologically advanced industrialized economy. Inherent to the U.S. economy is the great value placed on the theory of economic liberalism. Economic liberalism is the concept of capitalism

whereby a government does not try to control prices, rents, and/or wages, but instead permits open competition as the forces of supply and demand create equilibrium between them benefiting the vast majority of citizens. This concept of capitalism, however, does not entirely exclude the government from acting to promote or stabilize industries within the economy. Economic liberalism separates from the doctrine of laissez faire in its acceptance of government intervention to limit the spread of monopolies and in distribution of public goods as well as managing the economy through fiscal and monetary policies (Luthra, 2014). The freedom enjoyed by private companies is often coupled with limited government support. That being said, America was not always an outright defender of free-markets. After the American Revolution the American government, in its infancy, needed to protect newborn domestic industries with tariffs in order for them to grow and develop (“Something Old...,” 2013). Ultimately, however, these government-supported and owned firms were privatized as the state sold the enterprise, similar to British Gas or telecoms in Brazil (“State Capitalism...,” November, 2014). The state-owned enterprises in China, however, have begun to play the game differently as private investors remain subordinate to the state since the Chinese government maintains a controlling stake of the company. While it has been useful, if not necessary, to protect fragile industries in a developing economy, the state has historically stepped back to allow for private ownership once these firms were up-and-running, but this does not currently apply in China.

Since the end of the 1970s, Communist China has progressed from a primarily closed economy to one that is more market-oriented and participatory in the global economy. This process began under the auspices of Deng Xiaoping when he launched the “second revolution” that he described as “socialism with Chinese characteristics” (Hays, 2015). Deng was greatly influenced by Singapore’s developing economy, which embraced globalization by attracting powerful, global corporations to establish residence in Singapore. China ultimately began to adopt policies that would stimulate its economic development through slowly opening its borders to foreign trade and investment. Xiaoping worked to create geographic ‘economic zones’ that welcomed foreign investment and helped attract successful Western companies. China also forced state-owned enterprises to model their businesses after successful Western companies, while consolidating the country’s resources to create ‘national champions’ of industry, essentially supporting the creation of monopolies (“Something Old ...,” 2012).

China’s global economic development over the last several decades, while profound, occurred differently than that of the United States’ free-market system. Under capitalism the free-market is “an economic system characterized by private or corporate ownership of capital goods, by investments that are determined by private decisions, and by prices, production, and the distribution of goods that are influenced mainly by competition in a free market, rather than by the wishes of government” (“Capitalism,” 2014). The free-market entrepreneur has utilized capitalism principles to fuel most modern economies. Recently, however, emerging nations looking to develop industrial strength to become a player in the global trade arena have begun to employ a potent alternative, namely, state capitalism. State capitalism strives to combine the powers of the state, *i.e.*, government, with the benefits of capitalism (“Mixed Bag,” 2014). This function allows government to support state-owned enterprises by protecting and promoting economic growth in select industries while also listing these state-owned organizations in stock markets and embracing globalization and foreign trade. China has employed this strategy to a degree unlike any other country,



though this practice of state capitalism is increasingly being used in countries like Russia, South Africa, and Brazil.

The Chinese state is the largest shareholder in the country's 150 biggest companies, while supporting several thousand others by directing money toward favored industries and working closely to protect and shape the markets where these companies operate. Firms with partial state ownership receive the benefits of cheap capital when borrowing from the state with interest rates of only 1.6%, whereas Chinese private sector loans carry rates of 4.7% ("State Capitalism in the Dock", 2012). Additionally, these firms allegedly often receive political favoritism that inhibits private entrepreneurs from entering particular markets, thereby eliminating competition within an industry. And so, while supportive for those selected companies, state capitalism inherently creates a monopolistic market that can yield unfair trading on a global scale, while some companies enjoy the support (secretly or openly) of a national government, and others do not. However, the Chinese are comfortable with the state-directed model:

... the Chinese no longer see state-directed firms as a way-station on the road to liberal capitalism; rather, they see it as a sustainable model. They think they have redesigned capitalism to make it work better, and a growing number of emerging-world leaders agree with them ("The Rise of State Capitalism," 2012).

Although state owned organizations favor the development of a 'national champion' company, given the handouts and support from the state, long-term challenges prevent sustained growth. There is a long-held belief that state-supported firms excel in infrastructure development; however, outside of infrastructure construction industries protected from market competition have limited incentive to innovate through R&D limiting market advantage and are vulnerable to technological obsolescence. The protective state-capitalism approach towards economic development is countered by the relative strengths of a more open market approach, as employed in the United States. In the United States' market supported structure, companies see value in innovation hoping to establish competitive advantages with their products or services to gain market share and surpass their competition. When state-owned enterprises protect markets, products, and services against private competitors, there is little incentive to innovate. Additionally this opens the door for rapid obsolescence in a rapidly developing globalized business environment.

There is striking evidence that state-owned companies are not only less innovative, but also less productive than their private competitors. The Beijing-based Unirule Institute of Economics found that, "once one corrects for hidden subsidies such as free land and lower interest rates, the real return on equity of state-owned and state-holding enterprises from 2001 to 2009 is [negative] 6.3 percent," (Kuman, 2013) and an OECD paper in 2005 noted "that the total factor productivity of private companies is twice that of state companies." ("Mixed Bag," 2012). A study by the McKinsey Global Institute found that companies in which the state only holds a minority stake are 70% more productive than wholly state-owned ones ("Mixed Bag," 2012).

Yet while productivity is poor and innovation can be stifled, these companies are very profitable. In 2009 two Chinese state-owned companies (China Mobile and China National Petroleum Corporation) made \$33 billion, which was more than China's 500 most profitable private compa-

nies combined ("State Capitalism in the Dock," 2014). While these companies are currently successful at making money, establishing themselves as global players, and attracting private investment, their long range forecasts remain cloudy. Under this structure, there is potential for managers to run companies to suit their own interests rather than the interests of the company's stakeholders or consumers. Given little need to pacify hard-nosed investors looking for appropriate returns, history shows that capital investment projects occur more frequently and to a higher degree than what's necessary resulting in a huge misallocation of funds that yield little to no return (Bremmer, 2009). Additionally, "state capitalism ultimately adds costs and inefficiencies to production by injecting politics, and often high-level corruption, into the workings of markets" (Bremmer, 2009). The People's Bank of China estimates that between the mid-1990s and 2008 nearly 18,000 Chinese officials working as executives at state-owned enterprises received, in sum, \$123 billion (Seligson, 2009). This dynamic is further fueled by the Chinese cultural reverence to *guanxi*, which references the Chinese commitment towards having strong relationships and protecting one's social webs of connections (Karon, 2014). This strong cultural belief in close relations with those you work or associate with can result in situations where unqualified persons are awarded important positions. This variation of nepotism can yield poor, inefficient, and wasteful business decisions, thereby compromising the gains state-run Chinese companies initially possessed.

A more meaningful turn of *guanxi* studies aims to examine *guanxi* in the particular political and economic context of the transitional economy in post-reform China, where '*guanxi*' often refers to relations and connections to people in power, such as officials and cadres, so that one might have access to resources, information and privileges which others without *guanxi* might not be able to obtain.

Instead of allowing a liberalized economy, China's opening and reform have actually led to a range of patron-client relationships. In short, far from becoming likened to an ideal market economy model, the newly 'liberalized' economy in China is worked out by many symbiotic and clientelist (*sic*) relations between the state agents and the private business sectors. It is because of these entangled state-business relationships and *guanxi*-making with officials and cadres that the study of *guanxi* is also closely related to the study of corruption in China (Chan, 2013).

In fact in a series of speeches he delivered shortly after taking office in 2012, Chinese President Xi Jinping "cast corruption as not merely a significant problem for his country but an existential threat. Endemic corruption, he warned, could lead to 'the collapse of the [Chinese Communist] Party and the downfall of the state'" (Leung, 2015).

While Western business carries its share of mutually-beneficial arrangements between businessmen and politicians, the Chinese cultural use of *guanxi* and the prevalence of state support across the Chinese economy contrasts strongly with the Western social values of merit-based promotions and acquisitions. Nonetheless corruption and special interests are a serious pervasive issue for both China and the West.

## BENEFITS OF CHINESE STATE-CAPITALISM

In the article "Why China Does Capitalism Better than the U.S." Tony Karon of *Time* magazine comments on what he calls one of the 'great ironies' revealed by the global recession in 2008, citing how the Communist Party-ruled China managed capitalism's crisis better than democratic, liberal capitalism-supporting governments, i.e., the United States (Karon, 2014). The author observed that the stimulus spending packages from Beijing were larger and massively more effective at addressing the economic slowdown while systematically planting the seeds for future economic growth. The ability for China to navigate the 2008 economic crisis stems from the ability of China's economic leaders to utilize its authoritarian political system. Historian Francis Fukuyama is quoted by Karon stating that the Chinese system was able to "make large, complex decisions quickly." Fukuyama also references how the comparative inability of the American economic-political system to act quickly by stating:

Americans pride themselves on constitutional checks and balances, based on a political culture that distrusts centralized government. This system [*America*] has ensured individual liberty and a vibrant private sector, but it has now become polarized and ideologically rigid. At present it shows little appetite for dealing with the long-term fiscal challenges the US faces. Democracy in America may have an inherent legitimacy that the Chinese system lacks, but it will not be much of a model to anyone if the government is divided against itself and cannot govern (Karon, 2014).

Fukuyama also states that the American government is incapable of moving decisively given the backdrop of political parties' unwillingness to appropriately work together to address any economy-wide financial challenge.

## POLITICAL SYSTEMS

The American and Chinese political systems also differ greatly in how each addresses political issues affecting their economy as a whole. In the United States, legislation for changes in economic policy or action regarding the aggregated interests of the economy takes a great deal of time and is greatly influenced by lobbyists. Money has emerged as the trump card in the American political system where companies are privileged to exert their financial muscle to promote candidates and advocate loudly for policies that favor their business operations. Conversely, American firms are also able to voice their resistance towards policies that hurt their business, effectively blocking legislation or election of candidates who threaten their business. The ability to lobby, fueled by the funds of particular business interests, influences legislation that may be narrow in scope helping only those interests with the largest wallet. This system contributes to an economic-political dynamic that pays little attention towards the compiled interests of the economy or society as a whole. China, on the other hand, employs a course of government that functions in response to the heavy-hand of their central government. Across China there have been reports where the Chinese government has uprooted millions of its citizens, disregarding their protests, for the purpose of economic development, i.e., construction of the Three Gorges Dam (Oster, 2014). And while China

supports major ‘national champion’ companies unyieldingly, the Chinese political system is unlikely to give private corporations the power to influence or shape government decision making in a way that directly benefits a particular firm at the expense of the needs of the economic system as a whole (Karon, 2014).

## ECONOMIC FREEDOM

For the last 20 years, the Heritage Foundation and the Wall Street Journal have compiled and published data which measures the degree of economic freedom across the world. Economic freedom, as defined in the *Index of Economic Freedom* is:

...the fundamental right of every human to control his or her own labor and property. In an economically free society, individuals are free to work, produce, consume, and invest in any way they please. In economically free societies, governments allow labor, capital and goods to move freely, and refrain from coercion or constraint of liberty beyond the extent necessary to protect and maintain liberty itself ("2014 Index...", 2014).

Economic freedom yields prosperity among the people who possess it, and the Index illustrates the relationships between degrees of economic freedom and social and economic goals. The values inherent to economic freedom correlate with health, sustainable environments, per capita wealth, democracy, and presence of poverty ("2014 Index...", 2014). Governments in economically free societies allow labor, capital, and goods to move freely. The rule of law, property rights, freedom to establish contracts, external and internal openness of markets, protection of property rights, and freedom of economic initiative are all associated with a free society (Bedell, 2013). The United States received an economic freedom score of 75.5, which marks the U.S. as the 12<sup>th</sup> freest economy. The U.S. score has fluctuated over the 20-year history of the Index, attributable to declines in scores for property rights, freedom from corruption, and control over government spending given the substantial expansion in the size and scope of government (spending increases from the Trouble Asset Relief Program (TARP) as a result of the 2008 financial crisis, and Affordable Care Act of the Obama administration) (Bedell, 2013).

China’s economic freedom score is much lower than the United States, with a score of 52.5, making China the 137<sup>th</sup> freest in the 2014 Index. Modest improvements were noted with increased investment freedom, business freedom, and monetary freedom in recent years; however, these gains are offset by the poor levels of freedom from corruption, labor, and management of government spending, which continue to drive China’s overall economic freedom lower than the global and regional averages. China remains in the ‘mostly unfree’ category. The Index notes that the lack of political will to systematically restructure the economy in China has led to persistent dependence on state investment fueled by Communist Party authority (Bedell, 2013). Furthermore, China’s Communist Party continues to maintain strict limits and controls on speech, religion, and assembly, including the Internet, that inhibits the personal and economic freedom of its citizens.

## FUTURE

State capitalism has allowed China to establish its economic foundation, but the time is forthcoming where decisions need to be made regarding future approaches towards capitalism. The infrastructure projects employed under state capitalism have helped China to produce incredible hydroelectric power plants, airports, rail terminals and far-reaching high-speed rail lines. Additionally China's mobile-phone network is the world's largest, while possessing the largest number of Internet users utilizing broadband technology. China has also made strong commitments towards sustainable energy resources, and has seven of the world's ten largest solar panel manufacturers (Wang, 2014). Step-wise China has, through state support and selective nurturing of industry, created a strong infrastructure foundation as the basis for future growth. China hopes to capitalize on its large population as more people continue to shift from an agrarian lifestyle to one that is of a modern, secular lifestyle and outlook by quickly moving into growing cities across the country. While this process has yielded incredible results in establishing the Chinese economy as one of the world's largest, it has come at a cost to the millions of citizens who have been uprooted or whose lifestyles have been radically changed by their government under the premise of 'economic development'.

Chinese actions in the framework of state capitalism have created an economic arena that overlooks many of its people while providing unprecedented power to politicians and those members of the economic-political elite. This control pattern of free-market competition, experimentation and innovation will have negative impacts on the growth of the Chinese economy. Certain questions will grow louder in the coming years, particularly over who state-operated enterprises are run for – is it for the public good, or shareholders? And ultimately, who are the remaining shareholders? And so, as long as the state has the role of a major shareholder in these companies, the risk of controlled business decisions and management of economic innovation will continue.

In early July 2015 the Chinese government intervened as its stock market began to melt down. The China's Securities Finance Corporation (CSF) lent \$42 billion to 21 brokerage firms to enable them to purchase "blue chip" stocks. The CSF also pledged to buy more small and medium-sized stocks. Additionally a \$40 billion plan was announced to foster growth in areas of the economy needing investment to spur the economy, and the country pledged to speed up infrastructure spending that the government was already planning to do such as building roads and utilities. China also permitted half of the companies on the exchange to stop trading.

Furthermore controlling shareholders and board members were prohibited from reducing share holdings via the secondary market for six months threatening that anyone who violated this rule would face "serious" consequences. New IPOs were prohibited. China's central bank cut rates to a record low in an effort to pump more money into the system. Additionally the Yuan was allowed to fall to help spur the economy (CNNMoney, 2015).

Margin collateral rules were also loosened. Investors can now even pledge their homes as collateral ("China Tells Investors..." 2015).

Essentially the Chinese government directly intervened in the stock market to prevent a further selloff using an array of unprecedented strategies, several of which assumed a great deal of market risk by enhancing a market bubble.

What characterizes China today is that it is in the middle of a process of uncertain change. Its once purely socialist command economy is now partially socialist and partially capitalist, and it is this collision that helped trigger the drama of clashing systems and values that are now playing out (Schell, 2015).

Additionally “over the next five years, the credit rating agency Standard & Poor’s estimates that Chinese corporate debt will rise another 77 percent to \$28.8 trillion, a truly staggering total” (Taylor, 2015). China could indeed be facing a major debt crisis in the near term if it does not control both public as well as private debt. Yet the government continues to step on the gas pedal.

China’s transition from state capitalism to open market capitalism will not be smooth or fault free, but the challenges of this fundamental transition will allow both China and the U.S. to benefit as China’s economy continues to mature and develop. The United States political-economic dynamic can leverage the growing needs of the developing Chinese economy to enhance American trade interests, encourage innovation across the board, and develop appropriate investments in blossoming industries important to American and Chinese industrial and intellectual growth.

However, there are caveats. The growth in trade between the U.S. and China has increased America’s trade deficit with China in 2009 constant dollars from \$ -226,494 billion in 2009 to \$ -315,773 billion in 2014 (Interpolated, 2015), and there is every reason to expect that America’s trade dependency on China will continue to grow in the future. Secondly, while the Export-Import Bank of the United States lost its authority to operate on July 1, 2015 due to a lack of Congressional action, China has backed a new multilateral lending organization:

... global trade competition is evolving under the influence of new multilateral lending institutions, backed primarily by China. The New Development Bank, a joint venture of the BRICS countries (Brazil, Russia, India, China, and South Africa), and the Asian Infrastructure Investment Bank, spearheaded by China and set to begin operating by the end of this year, will play a growing role in financing large-scale projects in developing countries (Hochberg, 2015).

This New Development Bank and the Asian Infrastructure Investment Bank will be perfect lending vehicles for developing countries to borrow and trade in renminbi’s, China’s official currency, as compared to expensive American dollars. This will also complement China’s recent history of investing in developing countries worldwide. For example, it has become a key trading partner for Sub-Saharan (SSA) and West African countries. As of 2012 China’s trade with SSA “reached US \$22.42 billion ... following a year-on-year growth rate of 23.6 percent from 1995 to 2012” (Pigato, 2014). China has also become a major trading partner in Latin America. The Vice Minister of Foreign Affairs Li Jinzhang in the Quarterly *Americas* stated that in the last decade “China’s trade with Latin America has expanded dramatically. With the increase in commerce, China has displaced the United States as the number-one trade partner for Brazil and Chile and has deepened relations with Venezuela and Bolivia” (Jinzhang, 2011). In 2013 Nicaragua’s President

Daniel Ortega announced that a \$40 billion contract had been signed with a Hong Kong-based company that would design a trans-Pacific/Atlantic ocean canal route through the country that would challenge the Panama Canal, although it is still in development. Additionally China created the China – ASEAN Free Trade Area with twelve East Asian nations in 2002, which, as of 2014, shares 64% of its manufactured products with its members.

The U.S. has taken a different tack than China. It has been instrumental in developing NAFTA in 1993 and the WTO in 1995. As of this writing President Obama is in the final stages of negotiating the Trans-Pacific Partnership (TPP) with twelve Trans-Pacific Partnership countries including China. Additionally it is also negotiating the Transatlantic Trade Investment Partnership (TTIP). In addition to these four Free Trade Agreements (FTAs), the U.S. also is a member of an additional thirteen FTAs with nations around the world. However, China also joined the WTO in 2001, and it will be a major component of the TPP assuming it is approved by the U.S. Nonetheless, the primary objective of these trade agreements is to increase trade by lowering tariffs and reducing trade barriers, and the level of trade between the U.S. and China has been rapidly increasing although they do not emphasize FDI as is the case with China.

China has been making extensive Foreign Direct Investments worldwide. While China and the United States are not competitors playing a zero-sum game where one loses and the other wins, the reality is that China is achieving worldwide influence and economic advantages through FDI as well as trade. The contest between the two nations should be perceived as an opportunity to strive to outperform the other by capitalizing on the competitive advantages each develops and implement.

The reality is that the U.S. and China have strong economic ties. Both countries benefit as their economies improve. An economic slowdown in either country would have repercussions for both. The American and Chinese trading partnership is a critical link to mutual growth. While China's strong state capitalism strategy is a challenge, American market-driven economic ingenuity and innovation will continue to find new opportunities in the Chinese and worldwide marketplace. U.S. strong trading growth through the use of free trade agreements is extremely positive, and will lead to long term economic and market growth. The American market driven strategy has the advantage of improving trade without requiring major investments, while China is investing major capital in international infrastructure as it makes investments for the future. These strategies are different yet not nose-to-nose competition, and properly managed should result in a stronger relationship between the two nations.

A positive relationship between both countries is a shared mutual interest. While state capitalism is a concern for the United States regarding such issues as China's alleged managed exchange rate and reputed disregard of intellectual property rights, China has complained about U.S. political opposition to Chinese infrastructure investment. (Rubin, 2013)

One possible solution for Chinese criticism of U.S. policies would be to encourage badly needed investment in U.S. infrastructure projects. This would be a solution to major American infrastructure needs, as well as creating jobs while drawing China closer to the U.S. (Rubin, 2013).

It is important for both countries, and indeed the world, to address major domestic financial issues including regulating the U.S. financial sector as well as managing China's housing and stock market issues. It is critical for both countries and world interests that they maintain vibrant economies based on fundamental growth rather than governmental monetary or regulatory policies. In fact the International Monetary Fund (IMF) has warned China that it needs to implement reforms to address vulnerabilities (Chivakul, 2014), and the United States that its financial markets still lack sufficient oversight (Ackerman, 2014), and as well as making several other economic and financial warnings to both countries.

Thus, both countries have strong business, financial, and trade interests with each other. Additionally, both countries are facing severe financial challenges that would be insurmountable without the continuation of this relationship. As China's economy matures it will be ever more challenging to manage state capitalism with free market capitalism, while its relationship with the United States and the world becomes ever more dynamic.

In his September 2015 visit to Washington in September, 2015 China's President Xi stated "The Cold War has long ended. Today's world has entered into an era of economic globalization where countries are interdependent upon each other. People should move ahead with the times, and give up on the old concepts of 'you lose, I win' or 'zero-sum game,' and establish a new concept of peaceful development and willing cooperation.

If China develops well, it will benefit the whole world and benefit the United States. If the U.S. develops well, it will also benefit the world and China" (White House, 2015).



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# The Bond Market Responses to Female CEOs Appointment

RENÉE OYOTODE<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

ZUBAIR ALI RAJA<sup>2</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

JORGE BRUSA

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*In recent years, studies in corporate governance have focused on understanding the effect of CEO gender on firm performance, stock returns and related risks. However, little research been conducted to uncover the effect of CEO's gender on bond performance and debtholders return. Using 65 female CEO appointments and a matching sample of 65 male CEO appointments, we examine whether gender of the newly appointed CEOs affect debtholders' wealth. We conduct a bond event study using the abnormal bond returns measure as proposed by Bessembinder et al. (2009) and subsequently refined by Ederington et al. (2013). Our results suggested that debtholders' reaction differ significantly to the news of CEOs appointment based on gender. In fact, they react negatively to the appointment of a female CEO and positively to the appointment of male CEO. Our results are robust after controlling for firm, board, bond and CEO characteristics. We believe that the negative reaction to female CEOs appointment might be explained by the fact that such appointments are relatively new, therefore debtholders might have not yet incorporated the largely cited characteristic of female manager's higher inclination to risk aversion as an element of reduced risk.*

**KEYWORDS** *Female CEOs, event study, bond market reaction, bond returns, TRACE*

**JEL** *G12, G14, G30*

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<sup>1</sup> Address correspondence to Renée Oyotode, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Boulevard, Laredo, Texas 78041, USA. Email: [reneeoyotode@dusty.tamiu.edu](mailto:reneeoyotode@dusty.tamiu.edu)

<sup>2</sup> Address correspondence to Zubair Ali Raja, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Boulevard, Laredo, Texas 78041, USA. Email: [zubairraja@dusty.tamiu.edu](mailto:zubairraja@dusty.tamiu.edu)

# Using WarpPLS in an Undergraduate Course on Data Analytics

NED KOCK<sup>1</sup>

*Texas A&M International University  
Laredo, Texas, USA*

*There has been an explosive growth in the use of data analytics techniques in business. In response to this, we have seen the development of undergraduate and graduate courses and programs focused on data analytics. This presentation introduces the session on undergraduate data analytics of the PLS Applications Symposium, conducted as part of the multidisciplinary Annual Western Hemispheric Trade Conference, at Texas A&M International University. The focus of the session is on presentations by undergraduate students in the course MIS 3360 (Business Data Visualization), which makes up a newly designed program focusing on management information systems and data analytics offered by the A. R. Sanchez, Jr. School of Business. The presentations refer to mid-semester course projects employing the software WarpPLS, version 5.0. The analyses illustrate the application of model-driven data analytics techniques using the partial least squares (PLS) method in the context of structural equation modeling (SEM).*

*KEYWORDS Multivariate Statistics, Partial Least Squares, Structural Equation Modeling, Data Analytics, Undergraduate Education*

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<sup>1</sup> Address correspondence to Ned Kock, Division of International Business and Technology Studies, Texas A&M International University, 5201 University Boulevard, Laredo, Texas 78041, USA. Email: [nedkock@tamiu.edu](mailto:nedkock@tamiu.edu)

# Quality of Service from the Office of Information Technology

CHRISTIAN GOMEZ<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

ALEXIS MENDOZA

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

HUMBERTO GARZA

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

ANDRES LARES

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

CHRISTIAN PEREZ

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*The Office of Information Technology at Texas A&M International University focuses on maintaining the technological aspects within the university free of errors. Services provided by the vast amount of employees in this department are crucial for the university to maintain the technology functioning, since technology is used for a majority of daily activities. The main goal of this presentation is to help the Office of Information Technology determine overall quality of service for their departments using WarpPLS. Service Quality Reports submitted will serve as our unit of analysis since they provide information about the service provided by the employees of the Office of Information Technology. The overall service provided will depend on variables such as response time, the solution or outcome, communication, and courtesy or professionalism of the employee for whom the Service Quality Report was filled out for and submitted. Other variables that will be used to determine the overall quality will be the individual who submitted the report, whether they are faculty, staff or student, the priority of the report, the time of day and day of the week, as well as if the individual who submitted the quality report added an opinion on the space provided in the form. With the results provided from analyzing the data and multiple variables, we are expecting to help determine what improvements can lead to the provision of better service.*

**KEYWORDS** *Multivariate Statistics, Partial Least Squares, Structural Equation Modeling, Service Improvement, Data Analytics, Information Technology, Service Quality*

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<sup>1</sup> Address correspondence to Christian Gomez, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Boulevard, Laredo, Texas 78041, USA. Email: [christiangomez@dusty.tamiu.edu](mailto:christiangomez@dusty.tamiu.edu)

## Center for the Study of Western Hemispheric Trade: IBC Keynote Speaker Series

RAUL MORENO JR.<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

ANDREW ALBERTO ARTEAGA

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

CASSANDRA ARZUAGA

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

FERMIN RENDON

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

BRENDA PARNIN

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*The main purpose of this presentation is to help the Center for the Study of Western Hemispheric Trade at Texas A&M International University use the PLS method to analyze the collected data from the past five years on the IBC Keynote Speaker Series. The analysis will determine what variable or variables affect the perceived quality of the Series, to ultimately show the Center for the Study of Western Hemispheric Trade what areas to improve on. The data collected was from questionnaires that serve as evaluation forms for each IBC speaker presentation. The variables that appear to significantly affect the rate of the presentation are the following: rate of the facility, relevance and interest of topic, knowledge of the speaker, question satisfaction, advertising methods, and semester of presentation. The overall goal for this analysis is to provide the Center for the Study of Western Hemispheric Trade a strategic plan that will allow them to increase the audience population and maintain a high satisfaction rate.*

**KEYWORDS** *Multivariate Statistics, Partial Least Squares, Structural Equation Modeling, WarpPLS*

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<sup>1</sup> Address correspondence to Raul Moreno Jr., A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Boulevard, Laredo, Texas 78041, USA. E-mail: [raul\\_moreno@dusty.tamtu.edu](mailto:raul_moreno@dusty.tamtu.edu)



## TAMIU Career Fairs' Satisfaction Analyses

MOISES LINARES<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

ATZAEEL CAMPOS

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

JOSE PULIDO

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

ASHLEY ORTIZ

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

VANESSA GARCIA

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*Texas A&M International University's Office of Career Services aims to provide students with events and workshops that will enhance the students' professional development. Their main events include career fairs. Our data sets encompass multiple career fairs at TAMIU throughout the span of two years. The first data set includes data from the survey filled out by students and the second data set is the survey filled out by recruiters that attend the career fairs. The latent variables in the model for the student surveys are: type of student, length of program, how did the student hear about the fair, the types of agencies represented, and our dependent variable is overall satisfaction. For the recruiters' surveys our latent variables are: type of recruiter, length of program, registration process, program format, and student/alumni interest and our dependent variable is overall satisfaction. The analysis includes but is not limited to, multivariate statistics to see how the outcome of more than one variable will affect the overall satisfaction rate. The ultimate goal of this analysis is to help TAMIU Office of Career Services by using WarpPLS to carefully analyze their data, in order to give the department meaningful suggestions in order to increase both the attendance and overall satisfaction of TAMIU students and employers when participating in TAMIU career fairs.*

**KEYWORDS**     *Multivariate Statistics, Partial Least Squares, Structural Equation Modeling, Field Research*

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<sup>1</sup> Address correspondence to Moises Linares, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Boulevard, Laredo, Texas 78041, USA. E-mail: [malinares@dusty.tamiu.edu](mailto:malinares@dusty.tamiu.edu)



## **Modelo de aduanas de la UE vs NAFTA**

KARLA YOSSELIN BLANCO GARCÍA<sup>1</sup>  
*Universidad Autónoma de Tamaulipas*  
*Nuevo Laredo, Tamaulipas, México*

*El objetivo de esta investigación es analizar los procesos que se tiene en las aduanas en los países que conforman la región NAFTA y los países que conforman la Unión Europea. Esta investigación consta de los procesos que se realizan en los lugares mencionados con el fin de identificar un modelo comparativo aduanero entre la Unión Europea y la región NAFTA, observar similitudes y diferencias que existen entre la Unión Europea y la región NAFTA para encontrar procesos para una mayor competitividad para la región NAFTA.*

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<sup>1</sup> Address correspondence to Karla Yoselin Blanco García, Licenciatura en Comercio Exterior. 8º, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. E-mail: [kyblanco@gmail.com](mailto:kyblanco@gmail.com)

# **Análisis de la operación aduanera y logística en las empresas IMMEX para Nuevo Laredo**

EDUARDO DANIEL DE LEÓN DELGADO<sup>1</sup>

*Facultad de Comercio Administración y Ciencias Sociales  
Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México*

JOSÉ EDUARDO SEGOVIA MASCORRO

*Facultad de Comercio Administración y Ciencias Sociales  
Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México*

DR. FERNANDO HERNÁNDEZ CONTRERAS

*Facultad de Comercio Administración y Ciencias Sociales  
Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México*

*La Industria Maquiladora de Exportación nace a mediados de la década de los sesenta, como una respuesta económica al encarecimiento de la mano de obra que tuvo lugar en otros países altamente industrializados. Con este propósito, el Gobierno Federal publicó el 1 de noviembre de 2006 el Decreto IMMEX, con el objetivo de mejorar la capacidad del sector exportador mexicano. El objetivo principal es otorgar a la industria mexicana, las mismas circunstancias que brindan nuestros competidores, que le permitan posicionarse con éxito sus productos y servicios en el área del comercio mundial. Tres características principales que poseen las empresas IMMEX serían un proceso productivo eficiente para reducir los costos de producción, segundo un sistema logístico eficaz que beneficie a la empresa en el costo final del producto y por último un proceso aduanero fortalecido en el que no haya margen de error o al menos que este se reduzca al mínimo. Un proceso productivo eficiente que consistiría en transformar un conjunto de recursos, materias primas, productos semielaborados en otros productos a menor costo que satisfagan la demanda de un cliente. La logística hace referencia al conjunto de actos y métodos necesarios para llevar a cabo la organización de una empresa, algún servicio en especial de distribución o transporte de un producto. Por otra parte un sistema aduanero de calidad que se complementarían tres aspectos que son la parte pública en este caso el SAT por medio de las aduanas, el segundo serían el sector privado que dan servicio de agente aduanal y claro las empresas en este sentido, IMMEX.*

**PALABRAS CLAVE**      *productividad, logística, operación aduanera.*

*The Maquiladora Export Industry was born in the mid-sixties, as an economic response to rising labor held in other highly industrialized countries. To this end, the Federal Government published November 1, 2006 the IMMEX Decree, in order to improve the capacity of the Mexican export sector. The main objective is to provide the Mexican industry, the same circumstances that give*

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<sup>1</sup> Address correspondence to Eduardo Daniel de León Delgado, Alumno Investigador de la Universidad Autónoma de Tamaulipas, Facultad de Comercio Administración y Ciencias Sociales, Nuevo Laredo, Tamaulipas, México.  
E-mail: [danieldd1234@hotmail.com](mailto:danieldd1234@hotmail.com)

*our competitors, enabling it to successfully position their products and services in the area of world trade. Three main characteristics that IMMEX companies would have an efficient production process to reduce production costs, second an effective logistics system that will benefit the company in the end cost of the product and finally a strengthened customs process in which no margin for error or at least that this is minimized. An efficient production process that would transform a set of resources, raw materials, intermediate products into other products at lower costs to meet customer demand. Logistics refers to the set of actions and methods needed to carry out the organization of a company, especially a service distribution or transportation of a product. Moreover a customs quality system three aspects that are part of the public in this case the SAT through customs would complement, the second would be the private sector that provide services and clear customs agent companies in this regard, IMMEX.*

**KEYWORDS**    *Productivity, Logistics and Custom Operation.*

## INTRODUCCIÓN

Las empresas IMMEX antes solo eran conocidas como empresas maquiladoras en nuestro país. La Industria Maquiladora de Exportación nace a mediados de la década de los sesenta, como una respuesta económica al encarecimiento de la mano de obra que tuvo lugar en otros países altamente industrializados. Con este propósito, el Gobierno Federal publicó el 1 de noviembre de 2006 el Decreto IMMEX, con el objetivo de mejorar la capacidad del sector exportador mexicano. De esta manera en respuesta a la enorme competitividad de los mercados internacionales, el objetivo principal es otorgar a la industria mexicana, al menos de las mismas circunstancias que brindan nuestros principales contendientes, que le permitan posicionar con éxito sus productos y servicios en el área del comercio mundial.<sup>2</sup> Tres características principales que poseen las empresas IMMEX serían un proceso productivo eficiente para reducir los costos de producción, segundo un sistema logístico eficaz que beneficie a la empresa en costo final del producto y por último un proceso aduanero fortalecido en el que no haya margen de error o al menos que este se reduzca al mínimo. Para empezar un proceso productivo eficiente que consistiría en transformar un conjunto de recursos, materias primas, productos semielaborados en otros productos a menor costo que satisfagan la demanda de un cliente.<sup>3</sup> Con respecto al sistema logístico hace referencia al conjunto de actos y métodos necesarios para llevar a cabo la organización de una empresa, algún servicio en especial de distribución o transporte de un producto.<sup>4</sup> Por otra parte un sistema aduanero de calidad que se complementarían tres aspectos que son la parte pública en este caso el SAT por medio de las aduanas, el segundo serían el sector privado que dan servicio de agente aduanal y claro las empresas en este sentido, IMMEX<sup>5</sup>. La investigación tiene por objetivo desarrollar un sistema de estrategias y métodos de asesoramiento para la optimización y eficiencia de los procesos de la cadena de suministros en las áreas antes mencionadas para las empresas con programa IMMEX y para atraer a nuevos inversionistas. Este se realizaría implementando y

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<sup>2</sup> Secretaria de Economía, IMMEX, Disponible en : <http://www.economia.gob.mx/comunidad-negocios/industria-y-comercio/instrumentos-de-comercio-exterior/immex> (México, 2006)

<sup>3</sup> Lopez, Víctor, Gestión eficaz de los procesos productivos, Capitulo 1 (Edirectivos, España) Pág. 6

<sup>4</sup> Ballou, Ronald, Logística: Administración de la cadena de suministro, (Pearson Educación, México, 2004)

<sup>5</sup> Barahona, Juan, Logística Comercial y modernización aduanera, Servicio, modelo, proceso y sistema aduanero (Costa Rica: EUNED, 2006) Pág. 52

utilizando herramientas como el análisis del problema y diagnóstico, análisis bibliográfico, análisis comparativo, análisis teórico, análisis estadístico y entrevistas a expertos en la materia. Esto claramente beneficiaría al inversionista extranjero y nacional, y claro a quienes desarrollen este sistema estratégico que seríamos alumnos de L.C.E. y otras carreras de la F.C.A.C.S. de Nuevo Laredo así como a la población de nuestra ciudad que trabajarían en otras áreas de trabajo que también saldrían beneficiados. Este trabajo se desarrolla de la siguiente manera la primera parte hablara de lo que es el desarrollo productivo en una empresa. Así mismo el segundo segmento de esta investigación nos indica la importancia de la logística en las empresas IMMEX. El tercer segmento nos mostrara como se realiza la operación aduanera desde el punto público y desde luego privado.<sup>6</sup> Por último tendremos nuestra conclusión y puntos de vista al respecto y claro las ideas a plantear, además de propuestas a exponer para solucionar el problema citado que es el desaprovechamiento de Nuevo Laredo como punto estratégico de inversión a comparación de otras ciudades fronterizas con aduana.

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<sup>6</sup> Diaz Leal, Eduardo, Sistema Aduanero Mexicano 2015 21° Edicion,(Mexico,2015)

## **Atrayendo a los clientes a la oferta de servicios de distribución y almacén**

RODOLFO RODRIGUEZ LEDEZMA<sup>1</sup>  
*Universidad Tecnológica de Nuevo Laredo  
Nuevo Laredo, Tamaulipas, México*

*El objetivo de este proyecto es proponer una oferta integral de servicios, ya que las empresas que lo ofertan les abre un mundo de negociaciones con empresas internacionales, el propósito es llegar a nuevas negociaciones y así fortalecer nuestra cartera de clientes teniendo todos los servicios conjuntados en puerta a puerta, servicio de carga mexicana tanto como consolidado y cargas completas, agente aduanal mexicano y americano, bodega mexicana, recinto fiscalizado, bodega americana, transfer, y transporte americano. Una de las problemáticas de nuestros clientes cuando solo nos pide servicios de Agencia Aduanal es la triangulación de información esto se controla bajo una persona especializada en el ramo que lleva a cabo todo el proceso del embarque y será la única que informe al cliente sobre la situación de sus mercancías. Este lleva el nombre de Operador Logístico.*

*PALABRAS CLAVE      Servicios Integrales, negociaciones, operador logístico*

## **Alluring Customers to Offer the Service of Distribution and Storage**

*The objective of this project is to propose an offer of integral services, as companies that offer it open a world of negotiations with international companies. The purpose is to reach new negotiations and therefore strengthen our customer base by having all the services conjoined from door to door, along with Mexican cargo services, as well as consolidated and full cargos, Mexican and American customs broker, Mexican warehouse, bonded warehouse, American warehouse, transfer, and American transportation. One of the problems of our clients, when only asking for customs broker services, is the triangulation of information. This is controlled by a specialist in the branch that performs all of the boarding process and the only one that informs the customer about the status of their goods. This specialist is called the Logistics Operator.*

*KEYWORDS      Integral services, negotiations, logistic operator*

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<sup>1</sup> Address correspondence to Rodolfo Rodriguez Ledezma, Universidad Tecnológica de Nuevo Laredo, Nuevo Laredo, Tamaulipas, México. E-mail: [rodolfo.rodriguez@palosgarza.com](mailto:rodolfo.rodriguez@palosgarza.com)

# Optimización y señalización de patio en Xpress International

JOSE ANTONIO MORENO ANDRADE<sup>1</sup>  
*Universidad Tecnológica de Nuevo Laredo*  
*Nuevo Laredo, Tamaulipas, México*

LUIS ANGEL MARTINEZ MOYA  
*Universidad Tecnológica de Nuevo Laredo*  
*Nuevo Laredo, Tamaulipas, México*

*Este proyecto consistió en elaborar un análisis de las ventajas que tendrá al momento de organizar el patio, controlando las entradas y salidas de las cajas mediante la señalización del patio en la empresa Xpress International (Línea Transportista). Esta empresa contaba con un alto nivel de descontrol al momento de la entrada o salida de alguna caja, de tal manera que los operadores dejan las cajas en cualquier lugar, sin importar la clasificación. Esto ocasionaba un congestionamiento en el patio e impedía que las cajas que ya estaban preparadas para salir se retrasarán, lo que sin duda alguna afecta directamente al tiempo de entrega de la mercancía y a la imagen de la empresa.*

*En este proyecto se realizó el estudio de play-out del patio de la empresa, para así realizar el acomodo de las cajas y poder tener su correcta clasificación y una localización más sencilla, esto se realizó mediante un “registro de patio”. De esta forma se obtuvo un control y organización de la mercancía que entra al patio, así mismo con este proyecto se comprobó que si se tiene un orden adecuado en la señalización y el acomodo de cajas, se tendrá un mejor flujo y control al realizar la extracción, acomodo o ubicación de las cajas.*

*En este proyecto se obtuvieron resultados favorables en cuanto a la disminución en tiempo de entradas y salidas de las cajas al patio de la empresa, con lo cual se logró comprobar la hipótesis; se sugiere que se realice la pavimentación en el área de patio, para que así se sigan reduciendo tiempos y así lograr un mejor acomodo de los cajas para la empresa.*

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<sup>1</sup> Address correspondence to Jose Antonio Moreno Andrade, Universidad Tecnológica de Nuevo Laredo, Nuevo Laredo, Tamaulipas, México. E-mail: [morenoandrade@hotmail.com](mailto:morenoandrade@hotmail.com)

## Relación dinámica entre México y Corea del Sur

OLGA NALLELY LONGORIA SÁNCHEZ  
*Universidad Autónoma de Tamaulipas*  
*Nuevo Laredo, Tamaulipas, México*

LUZ ELENA VARELA LIMÓN<sup>1</sup>  
*Universidad Autónoma de Tamaulipas*  
*Nuevo Laredo, Tamaulipas, México*

*México y la República de Corea del Sur necesitan reforzar el carácter estratégico de la relación bilateral e incrementar su contacto al más alto nivel. Los acuerdos suscritos por ambos países en temas políticos, económicos y de cooperación donde comprometen mantener el trabajo estrecho para ampliar y profundizar los vínculos entre dos países que se reconocen como socios estratégicos ya que sus ubicaciones geográficas son muy distantes.*

*México y la República de Corea cuentan con una Asociación Estratégica para la Prosperidad Mutua desde 2005, siendo el sexto socio comercial a nivel mundial y el tercero entre los países de Asia-Pacífico.*

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<sup>1</sup> Address correspondence to Luz Elena Varela Limón, Licenciatura en Comercio Exterior. 8°, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. E-mail: [luzvarela.94@live.com.mx](mailto:luzvarela.94@live.com.mx)

## **Implementación de las 5's**

PRISCILA ABISAI ROMERO ZARATE<sup>1</sup>  
*Universidad Tecnológica de Nuevo Laredo  
Nuevo Laredo, Tamaulipas, México*

ABRIL SARAHI VICENCIO MATEOS  
*Universidad Tecnológica de Nuevo Laredo  
Nuevo Laredo, Tamaulipas, México*

*Dentro de la empresa no existía un orden en cada una de las áreas de trabajo por tal motivo se decidió llevar a cabo ese proyecto ya que muchas empresas intentan implementar esta herramienta de una manera fallida y errónea, puesto que no se tiene el conocimiento y no hay una persona encargada para llevarlo a cabo.*

*Teniendo como objetivo principal implementar las 5'S en el área de tráfico en la empresa Transportes Garvy S.A de C.V*

*Lo que se quiere comprobar con este proyecto es que si se aplica la técnica de las 5'S, aumentará la cultura del orden y limpieza en el área de tráfico.*

*Para su implementación se designo a un evaluador el cual previamente explico cada una del as 5's, de ahí se partió a la evaluación, por medio de esta se noto la colaboración de los trabajadores por mejorar, así también tener un mejor lugar de trabajo.*

*Durante el lapso que se realizó la Metodología los resultados fueron favorables ya que al implementar la técnica de las 5's se logró comprobar que se puede tener un área de trabajo más organizada y limpia. Se recomienda extender y dar seguimiento a las demás áreas de trabajo así como medir si hubo una mejoría en la parte productiva.*

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<sup>1</sup> Address correspondence to Priscila Abisai Romero Zarate, Universidad Tecnológica de Nuevo Laredo, Nuevo Laredo, Tamaulipas, México. E-mail: [abii.roza@gmail.com](mailto:abii.roza@gmail.com)



## **5's Implementation**

*Within the company, there existed no order in each one of the work areas which is why it was decided to carry out that project because many companies try to implement this tool in a flawed and erroneous way. This is because the companies do not have the knowledge nor a person in charge to carry it out.*

*With the main objective to implement the 5's in the traffic area in the company Garvy Transportes S.A de C.V.*

*What we want to prove with this project, is that if the 5's technique is applied, it will raise the culture of order and cleanliness in the traffic area.*

*For its implementation it was appointed to an evaluator, which previously explained each one of the 5's. From there, the evaluation was split; through this the collaboration of the workers improvement was noticed and also have a better workplace.*

*During the period that the methodology was performed, the results were favorable because once implementing the 5's technique it was able to prove that it is possible to have a more organized and clean workplace. It is recommended to extend and follow to the other work areas this way be able to measure if there was an improvement in production.*

# Comercio internacional impacto en el planeta: calentamiento global, transgenicos

NORA JANETH LOPEZ LOPEZ<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*El comercio globaliza estandarizando productos, la tecnología avanza rápidamente, las empresas emiten gases contaminando, la tecnología ha invadido el campo dando paso a los productos transgénicos, analizaremos ventajas y desventajas en la salud del ser humano y al medio ambiente (Whitman, 2000). La problemática ambiental se derivada del comercio de productos orgánicos y transgénicos, la ONU advirtió daños que causan algunos productos (ONU, 2015:05), la OMS identificó posibles riesgos a la salud del ser humano (OMS, 2012). La investigación propone medidas para cambiar el impacto del sobrecalentamiento y reflexionar sobre los productos transgénicos.*

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<sup>1</sup> Address correspondence to Nora Janeth Lopez Lopez, Division de Estudios de Posgrado e Investigación, Facultad de Comercio, Administración y Ciencias Sociales de Nuevo Laredo, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. E-mail: [noraj\\_4@hotmail.com](mailto:noraj_4@hotmail.com)

# Overview of Reliability and Security Issues in Wireless Sensor Networks

NIKHITHA OMMI<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

KARTHEEK SRUNGARAM

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*Wireless Sensor Network (WSN) is deployed with tiny sensor nodes which are capable of sensing changes in the deployed area and communicated with other devices to forward the sensed data. WSN is an emerging technology whereas its usage spans across industries like, ecological monitoring, health care and military surveillance. The criticality of many of these missions requires reliability and security of data being transferred. Existing wired network routing protocols and security schemas doesn't work for WSN because of their imperatives. WSN suffers from many constrains including small memory, low computational power, limited energy resources and prone to tampering of node. In this project we will present a survey of various reliability and security issues of WSNs primarily concentrating on various security compromising attacks.*

**KEYWORDS**     *Sensor network, security, reliability, attacks*

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<sup>1</sup> Address correspondence to Nikhitha Ommi, Master of Information Systems, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd., Laredo, TX 78041, USA.  
E-mail: [nikhitha\\_ommi@dusty.tamiu.edu](mailto:nikhitha_ommi@dusty.tamiu.edu)

# Text Mining on Supreme Court Decisions

ROBBI MARLETT<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

ASHLEY MILES

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*Extracting text data from Supreme Court decisions is crucial into forecasting future for Supreme Court rulings. This paper dissects Supreme Court Decisions common factors utilizing frequencies, R studio and Porter stemming algorithm. Our findings will predict Supreme Court decisions insights using text mining. The findings are compared to results obtained by law excerpts.*

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<sup>1</sup> Address correspondence to Robbi Marlett, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd., Laredo, Texas 78041, USA. E-mail: [robertamarlett@dusty.tamiu.edu](mailto:robertamarlett@dusty.tamiu.edu)

# **‘OkCupid’- A Dating Website: Concept of Data Mining for Dating**

PHANI SOMESHWAR HARI<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

RESALAT ANWAR

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

MUKESH KORATI

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

PARVATEESH GUTTI

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*OkCupid! As many of us know, is a popular website that is used for dating and meeting new people. In this American based online dating website, there are few other features such as member-created quizzes and multiple choice questions. OkCupid founders, Chris Coyne, Christian Rudder, Sam Yagan, and Max Krohn who were students in Harvard University started a matching website called TheSpark. This was a beta experiment of allowing registered users who has taken Match Test to search/contact each other based on matching types. Later in 2001, TheSpark was OkCupid.*

*The underlying concept of the matching criteria is that the answers for the questions that were given to the users are stored and then data mined creating patterns. Then a pattern recognition or a similarity recognition is made to see the similar answers that are matched between a male and a female and appropriate matches are shown to the users. We are going to discuss in detail in the conference about this functionality that involves in data mining and patterns recognition for data website.*

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<sup>1</sup> Address correspondence to Phani Someshwar Hari, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd, Laredo, TX 78041, USA. E-mail: [hariphanisomeshwar@gmail.com](mailto:hariphanisomeshwar@gmail.com)

# Predicting Outcome of NBA Games using Regressive Analysis

THARUN RAHUL MECHINENI<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

MUKESH KORATI

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

THARUN APPANI

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

ANVESH BASHYAM KODANDA

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*National Basketball Association (NBA) is well known men's basketball leagues that have more than 30 clubs. Many specialists, betting sites, and even fans themselves are attempting to make prediction to NBA final winners. Initially, gamblers predicted NBA diversions with their own particular encounters and formulae. Now days, particularly after the MLB Saber metrics mania, specialists and players began to create their own comparative technique and utilizing some computing models to bolster their predictions.*

*My objective was to construct an effective and accurate model of the prediction of NBA final results. In my work, I first survey other quantitative models of the NBA. Second, I introduce novel components separated from NBA play-by-play information that I use in building my prescient models. Third, I propose prescient models that utilize team statistics and insights. I demonstrate that team quality relations won't not be transitive in these models. Fourth, I propose prescient models that utilization player-level insights. In these player-level models, I exhibit that considering the connection of a play is essential in making valuable forecast. All information is taken from NBA basketball ball reference site. The reason I pick this site is on the grounds that this site gives customary information, as well as contemporary data, for example, TS% and Turnover Percentage (TOV%). Another point of interest of this site is it permits its information to be changed over to CSV structure for information processing.*

*There are numerous other considerations that can greatly affect the final prediction result like injuries, player contracts, team unity and gossips. Teams are subjected to change in the middle due to contracts and management operations. Despite the fact that there are many advanced techniques to analyze, there are many questions if these predictions could speak to the capacity of*

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<sup>1</sup> Address correspondence to Tharun Rahul Mechineni, A.R. Sanchez, Jr. School of Business, Texas A&M International University, Laredo, Texas, USA. E-mail: [tharun.rahul77@gmail.com](mailto:tharun.rahul77@gmail.com)

*a player or team. 60% accuracy is a general limit for any prediction in this case, since it is the regular rate a typical gamblers or other expertise could accomplish. 70% exactness would be a definitive objective, best analyzers and gamblers are known not precision around 70%. (ESPN: 68.3%, Bob Voulgaris: Around 70%)*

*In this paper, we aim to predict mens basketball results using data mining techniques. Rather than utilizing the conventional methodology of looking at the measurements of the two contending teams and anticipating the result, our methodology predicts the results taking into account various factors and previous results. The contending teams are measured with other teams, and based on the similarity the evaluation results are pulled from those comparable teams and utilized as a part of the prediction analysis. The results demonstrate the precision of our games data mining approach in anticipating the results of various different games in late seasons. As future work, we plan to examine information more precisely and using advanced techniques modern computation algorithms and apply them for different games.*

## **Regional Integration: The CAN and MERCOSUR Lesson**

CLARA DOWNEY, PH.D.<sup>1</sup>

*College of Business and Entrepreneurship  
University of Texas Rio Grande Valley, Brownsville, Texas, USA*

RUSSELL ADAMS, PH.D.

*College of Business and Entrepreneurship  
University of Texas Rio Grande Valley, Brownsville, Texas, USA*

*Given the proliferation of nations joining economic trade blocs that support regional integration, world markets are continually in flux and global growth is sliding away from stability. Previous theories and research have attempted to determine growth success based on within region trade, and both import and export trade variables. This research intends to investigate two South American trade blocs, CAN and MERCOSUR, who have not spurred significant results. Through employing a theory-based analysis of the member's shared characteristics, it will be determined if the similarities or dissimilarities are too inconsistent and disparate to support stable growth. The analysis will include assessing the member's economic, political, cultural, and geographic features, as compared with their intra and outward trade performance. The intent of this analysis is to contribute to the existing knowledge regarding the realistic future of these blocs.*

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<sup>1</sup> Address correspondence to Clara Downey, Ph.D., Department of International Business and Entrepreneurship, College of Business and Entrepreneurship, University of Texas Rio Grande Valley, Brownsville, Texas, USA.  
E-mail: [clara.downeyadams@utrgv.edu](mailto:clara.downeyadams@utrgv.edu)



# **Examining the Progress towards Sustainability in the Bangladesh RMG Sector in the Aftermath of the Rana Plaza Tragedy**

FARZANA NOOR BINDU<sup>1</sup>  
*College of Business, Prairie View A&M University  
Prairie View, Texas, USA*

*The EU countries, Canada and the US imported over US\$ 20 billion worth of RMG (Ready Made Garments) products from Bangladesh (2013-14). The devastating collapse of Rana Plaza in 2013 which cost 1136 lives brought Bangladesh in sudden unwanted limelight and posed an ominous question about the sustainability of its RMG sector. However, as part of the rapid response in the tragic aftermath, 3632 RMG factories has been inspected as of Dec 31, 2015. Among these, 1549 factories have been inspected by National Tripartite Action Plan (NTPA) undertaken by Government of Bangladesh with support from ILO. The remaining 2083 factories have been inspected by the two initiatives representing international brands and retailers viz. the landmark Bangladesh Accord and the Alliance for Bangladesh. This paper explores the process and number of Corrective Action Plans (CAP) and Detailed Engineering Assessments (DEA) conducted by the two international initiatives and the challenges of the remediation. It also takes a look into the Better Work Bangladesh program designed to improve working conditions and promote competitiveness in global RMG sector. The RMG sector database established by DIFE, the BGMEA B2B Web Portal and the annual reports of Accord, Alliance and ILO are used as Data Source.*

**KEYWORDS** *RMG, Corrective Action Plan, Detailed Engineering Assessment, Fire Safety, Worker Safety, Rana Plaza Tragedy, Worker Empowerment, Worker Training, Bangladesh*

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<sup>1</sup> Address correspondence to Farzana Noor Bindu, Adjunct Faculty, Department of Management and Marketing, College of Business, Prairie View A&M University, Prairie View, Texas, USA. E-mail: [fnbindu@pvamu.edu](mailto:fnbindu@pvamu.edu)

## 1. INTRODUCTION

The EU countries, Canada and the US imported over US\$ 20 billion worth of RMG (Ready Made Garments) products from Bangladesh (2014-15). Bangladesh is the second largest exporter of RMG products in the world which has enjoyed phenomenal growth over the past few decades. Almost 82% of Bangladesh total export earnings come from the RMG sector which employs more than 4 million workers in its 4296 factories (2014-15). The EU is the largest export market for RMGs for Bangladesh followed by the US. The EU and US account for 75% of exports of RMG for Bangladesh [1]. However, the fire related accident in Tazreen fashion in Nov, 2012 resulting in loss of 112 lives and the devastating collapse of Rana Plaza in 2013 which cost 1136 lives brought Bangladesh in sudden unwanted limelight and posed an ominous question about the sustainability of its RMG sector. The international outcry following the tragic event resulted in commitment by western buyers to extensive inspection of the apparel factories to ensure the safety of its workers. The collapse of Rana Plaza was a massive blow for a country that accounts more than 80% of its export earnings from the RMG sector worth US\$24.5 billion [1]. It was obvious that business cannot be conducted as usual and massive efforts should be made to implement a system that ensures workers health and safety, achieves an acceptable level of working conditions and empowers the workers who lies in the heart of this industry. However, it is easier said than done. Bangladesh is a country that lacks proper infrastructure, lacks worker training capacity and lingering political unrest creates roadblocks hindering any initiative for development in any sector. Given the situation, Bangladesh government asked for assistance from ILO (International Labor Organization) to combat the situation and to implement a system to achieve and maintain some goals critical for the sustainability of the RMG industry. [2] As part of the response in the tragic aftermath, 3632 RMG factories has been inspected as of Dec 31, 2015. Among these, 1549 factories have been inspected by National Tripartite Action Plan (NTPA) undertaken by Government of Bangladesh with support from ILO. The remaining 2083 factories have been inspected by the two initiatives representing international brands and retailers viz. the landmark Bangladesh Accord and the Alliance for Bangladesh. This paper explores the process and number of Corrective Action Plans (CAP) and Detailed Engineering Assessments (DEA) conducted by the two international initiatives and the challenges of the remediation. It also takes a look into the Better Work Bangladesh program designed to improve working conditions and promote competitiveness in global RMG sector.

## 2. STRENGTHENING THE NTPA

The ILO responded quickly in the aftermath of the Rana Plaza tragedy and agreed to work with Government of Bangladesh and employers' and workers' organizations to carry out urgent and medium term actions. The National Tripartite Plan of Action on Fire and Safety (NTPA) was developed after the fire related accident in Tazreen Fashion encompassing three critical areas: Policy and legislation, Administration and Practical Activities. The Rana Plaza collapse resulted in the signing of a joint statement of the partners' involved in the NTPA (government, workers, and employers) covering broader areas for action [3]. It identified critical areas for action such as the assessment of structural integrity of RMG factories, labor inspection reforms, occupational safety and health, rehabilitation and skill training and the launch of a new initiative named Better Work Bangladesh [2].

### 3. THE BIRTH OF ACCORD AND ALLIANCE

Two of the biggest events in the aftermath of the Rana Plaza tragedy was the formation of the two international initiatives the Accord and Alliance representing international brands and retailers.

#### 3.1 Formation of Accord

Two global unions viz. IndustriAll and UNI Global and more than 150 international brand and retailers and trade unions signed a five year independent, legally binding agreement designed to ensure health and safety measures in the RMG sector on May 15<sup>th</sup> 2013. The landmark Bangladesh Accord Foundation was incorporated the same year in the Netherlands. The agreement contained six key factors:

1. A five year legal agreement between brands and trade unions to safeguard worker safety in the RMG sector.
2. An independent inspection program carried out by brands. The trade unions and workers are also involved.
3. Public disclosure of list of sourcing factories, inspection reports and Corrective Action Plans (CAP).
4. A commitment to ensure availability of sufficient funds to carry out the remediation process.
5. Formation of health and safety committees in all related factories to identify and mitigate health and safety risks.
6. Ensure worker empowerment through extensive training and implementing a complaint mechanism ensuring the right to refuse in unsafe working condition.

The three programs carried out by Accord are:

- Inspection
- Remediation and
- Worker participation and training

As per the agreement by Accord, company signatories promise to disclose their supplier factories. The publicly available list is updated every month [4].

**Table 1:** Key Information included in Public Disclosure

<b>Key Information included in Public Disclosure</b>	
•	Factory name and address
•	The number of stories of each structure
•	If a building Includes multiple apparel factories
•	If a building accommodates other types of businesses
•	The number of workers in each factory
•	The number of Accord Company signatories in each factory

Source: Accord -Quarterly Aggregate Report- November 2015

### 3.2 Formation of the Alliance

On 10 July 2013, the Alliance for Bangladesh Worker Safety is established by 26 North American retailers and brands. Similar to Accord, the Alliance is a legally binding and five year agreement to improve worker safety in the Bangladesh RMG sector. The vision of Alliance is to improve worker safety in the RMG industry by upgrading factories, educating workers and management, empowering workers, and building institutions that can enforce and maintain safe working conditions throughout Bangladesh [5]. The five strategic areas/programs for Alliance include:

- Standards & Inspections
- Training
- Remediation
- Worker Empowerment
- Sustainability

## 4. INSPECTION PROCESS

All factories producing for Accord and Alliance signatory companies are subject to independent inspections on

- Fire
- Electrical and
- Structural safety

Factories are inspected against the established Building Standards, which are largely based on the Bangladesh National Building Code and the agreement made by the ILO between the Accord, the National Tripartite Plan of Action, and the Alliance for Bangladesh Worker Safety [3].

### 4.1 Corrective Action Plans (CAP)

After the factories are inspected for fire, electrical and structural safety, the inspection reports are prepared and shared with factory owners, the signatory companies of Accord/ Alliance and also worker representatives. The factory owner and the company signatories then work together to develop a Corrective Action Plan (CAP) that includes the following:

- *The remedial actions to be taken*
- *The specified timeline within which it will be completed and*
- *A financial plan to carry out the process*

**Table 2: Common findings in published CAPs**

<b>Common safety hazards reported in CAPs</b>	
<ul style="list-style-type: none"> <li>• Lack of certified fire doors in stairwells</li> <li>• Inadequate automatic fire alarm system</li> <li>• Inadequate fire separations and protected exits</li> <li>• Excess fire load in heavy traffic areas</li> <li>• Loose electrical connections and inadequate earthing system</li> <li>• Accumulation of dust and lint on electrical wiring</li> <li>• Negligence toward electrical systems</li> <li>• Lack of accurate structural drawings</li> <li>• Lack of plans to avoid excess weight in certain parts of the building</li> </ul>	

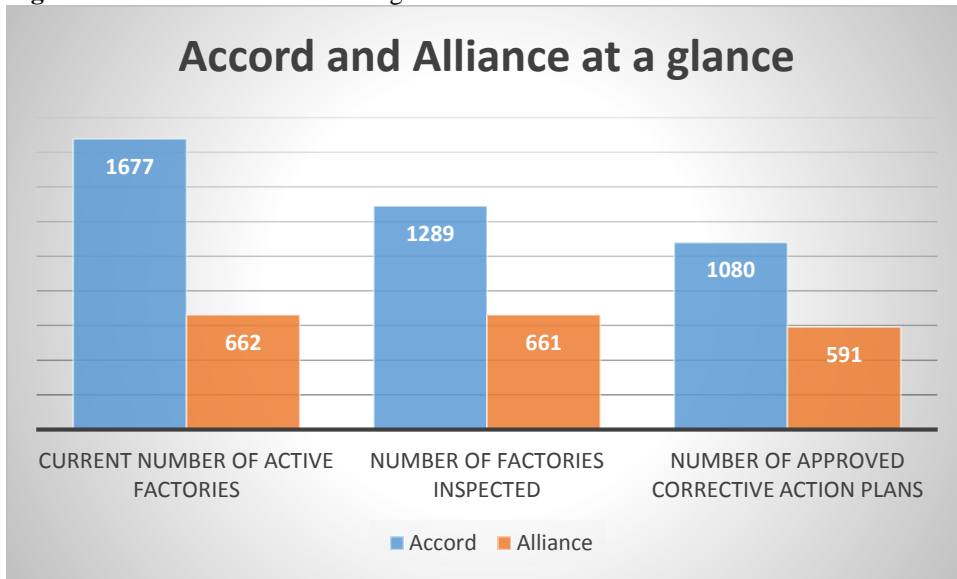
Source: Accord -Quarterly Aggregate Report- November 2015

**Table 3: Factory Status Designation on CAP**

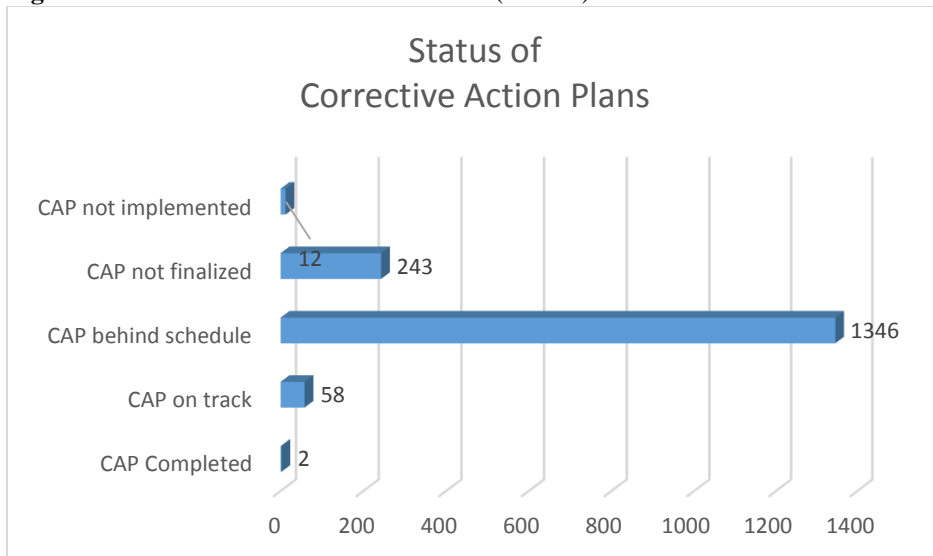
<b>Factory Status Designation on CAP</b>			
<b>Accord</b>		<b>Alliance</b>	
<b>Completed</b>	All issues identified in the Accord CAP have been resolved and verified by the Accord engineering team.	<b>Completed</b>	Factory has completed initial Alliance Requirement
<b>On Track</b>	The CAP is in implementation and all agreed to timelines are being met.	<b>On Track</b>	Progressing adequately with Alliance Requirement
<b>Behind Schedule</b>	The CAP is in implementation but some timelines have not been met.	<b>Needs Intervention</b>	Falling behind or refusing to Alliance Requirement
		<b>Critical</b>	At risk of being removed from Alliance compliant factory list based lack of progress with Alliance Requirement

Source: Accord -Quarterly Aggregate Report, Nov 2015 and Alliance 2<sup>nd</sup> Annual Report, Sep 2015

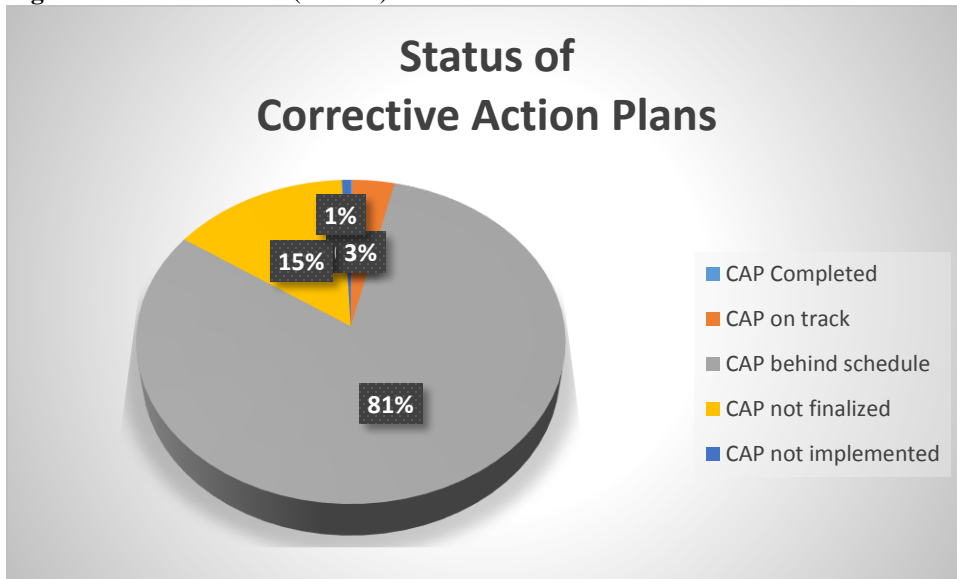
**Figure 1: Accord and Alliance at a glance**



**Figure 2a: Status of Corrective Action Plans (Accord)- Feb 2016**

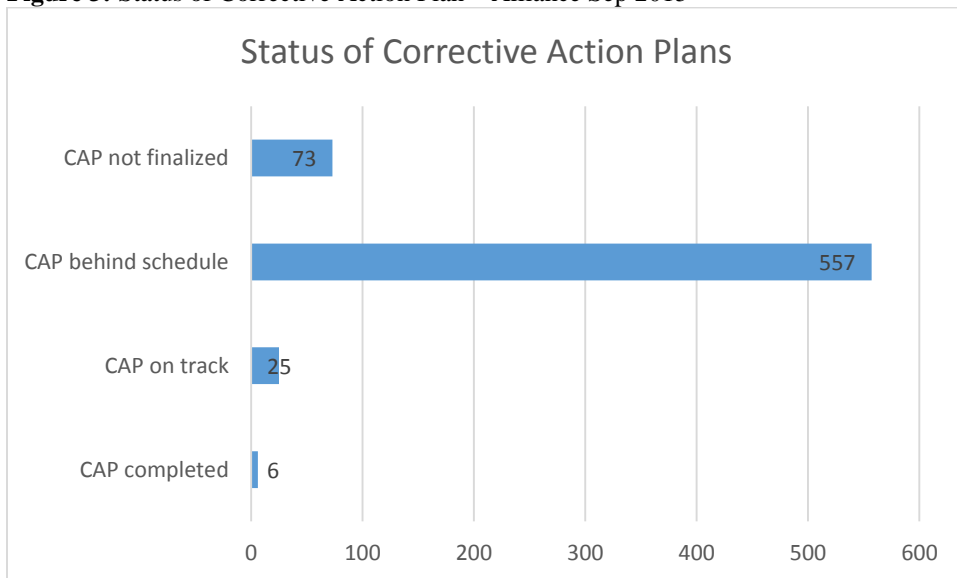


**Figure 2b:** Status of CAP (Accord)



As of Feb 2016, out of 1661 factories, 1589 are either behind schedule or CAP not finalized, consisting 96% of total factories under Accord. However, a CAP is marked Behind Schedule even if just one item has passed the specified deadline for correction. For that reason, even if factories are behind schedule that does not necessarily imply that no progress has been made. More than half of all factories Behind Schedule have more than 50% of the CAP issues pending verification or verified [3].

**Figure 3:** Status of Corrective Action Plan – Alliance Sep 2015

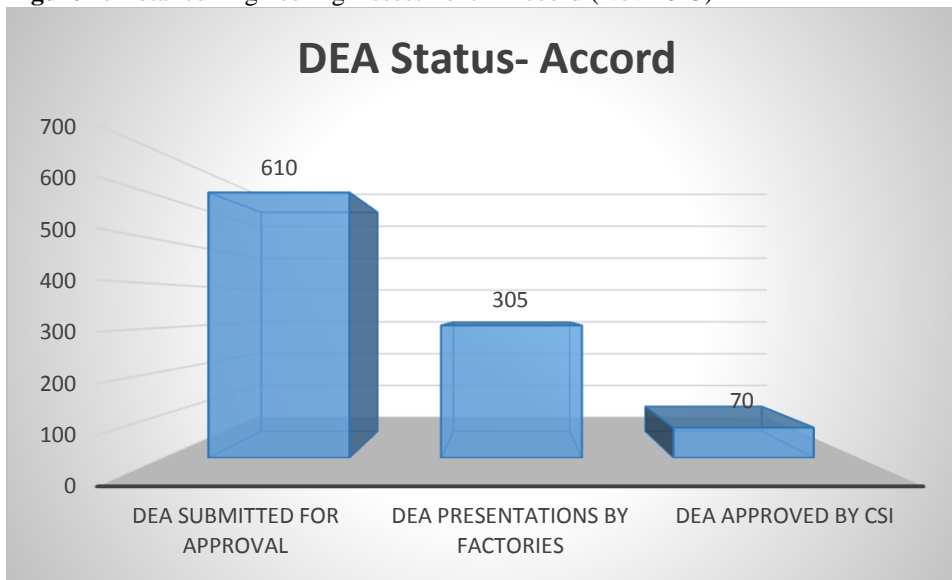


## 4.2 Detailed Engineering Assessment (DEA)

If during initial inspection process of a factory building indicates any potential structural weakness, more in-depth structural Detailed Engineering Assessment (DEA) is required for all parts of the building. A qualified structural engineer hired by the factory conducts the DEA. The DEA involves preparing as-built drawings, conducting engineering tests like sampling and testing concrete strength, assessing actual loading, preparing load plans and developing retrofitting drawings. The DEA is then submitted to Accord/Alliance for review. Usually it is a repetitive process and may require 2 or 3 reviews and presentations before the approval takes place for further work.[3]

- The biggest challenge faced in the initial stages of the DEA process was to find experienced structural engineers to carry out the DEAs.
- Another challenge is a long waiting time for concrete tests to be conducted in the authorized testing laboratories.
- The DEA process has improved over time as engineers are gaining valuable experience in the complex technical discipline.

**Figure 4:** Detailed Engineering Assessment – Accord (Nov 2015)



The figure above shows that 610 DEA have been submitted for approval and so far 70 have been approved.

Though Alliance requests its factories for DEAs and structural drawings for approval before beginning the remediation process, it has not yet reported the number of DEAs submitted for approval.



### 4.3 Fire Design and Drawing

The inspection may require a factory to install fire protection systems such as fire alarm systems, automatic sprinkler systems and hydrant systems. These designs need to be approved by Accord/Alliance prior to installation.

### 4.4 Review Panel Submission

If the inspection team identifies a severe and imminent risk of structural failure, they need to submit its inspection results to the Government of Bangladesh' Review Panel. The Review Panel team consists of 4 review Panel Engineers – 1 Accord, 1 – Alliance, 2 Government of Bangladesh/ Bangladesh University of Engineering Technology. It is the job of the Review Panel to determine if a building needs to be evacuated or suspended due to weak structural integrity of a factory building [3].

## 5. REMEDIATION PROCESS

Once the CAP are in place, the remediation process is started. Engineers from Accord and Alliance conduct Remediation Verification Visits (RVV)/ Follow-up Inspections as part of the remediation process. The objective of these visits are to validate progress reported by factory managers and to make sure that the remediation efforts match the standard set by Accord and Alliance. Once a factory reports that all issues have been corrected, an independent contractor carries out the final inspection [3][4].

### 5.1 Status of Safety Findings

The fire, electrical and structural findings from the inspections are the main components of the Corrective Action Plan. The figure 6 represents all reported findings in published CAPs\*.

\* Alliance as of 09/15 and Accord as of 08/15.

**Figure 5: Total Reported Findings by Accord and Alliance**

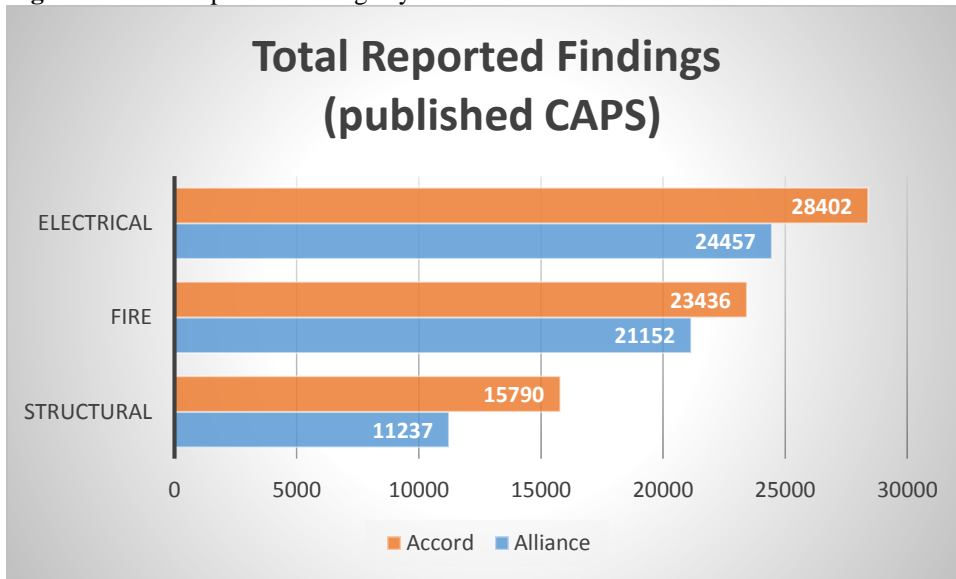
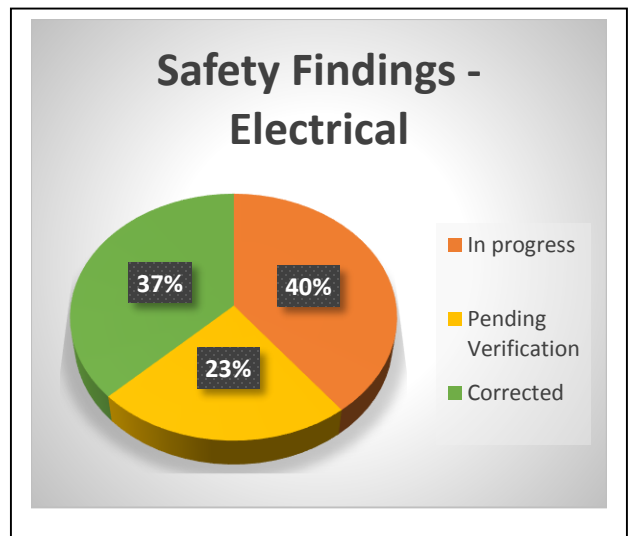
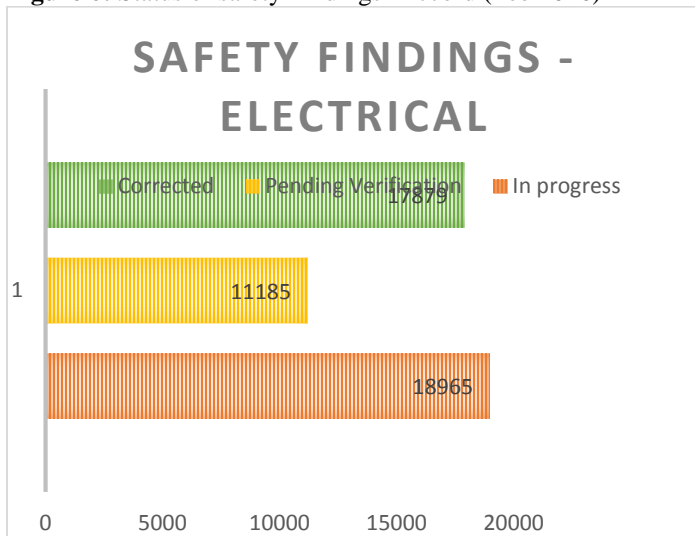


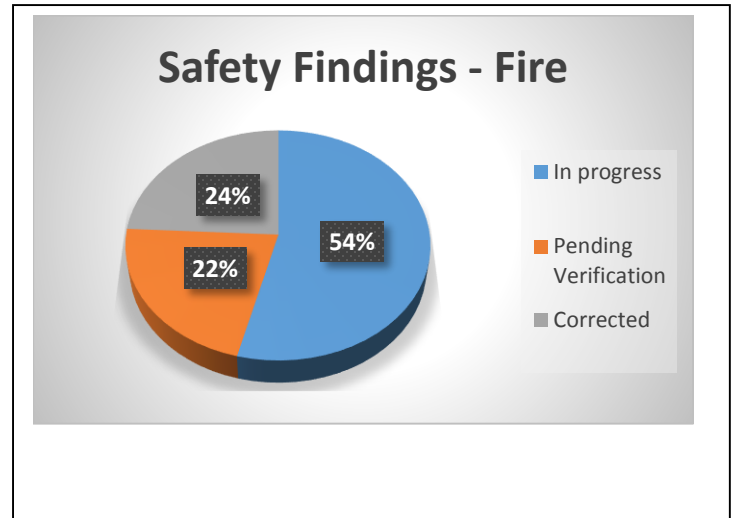
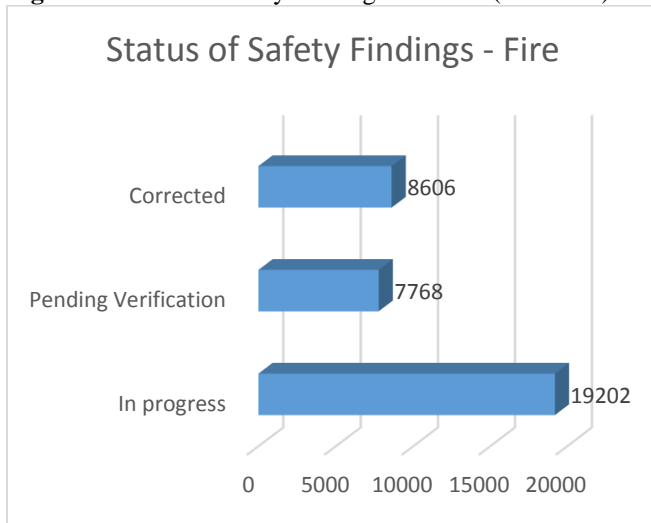
Figure 7-12 below shows the status of safety findings for Accord and Alliance respectively. Please note that Accord and Alliance report their findings in a different manner. While Accord reports their safety findings by the level of progress (For example: In progress, Pending Verification and Corrected), the Alliance report the status of safety findings by priority level (For example: High Priority, Medium Priority and Low Priority).

**Figure 6: Status of safety Findings- Accord (Feb 2016)**



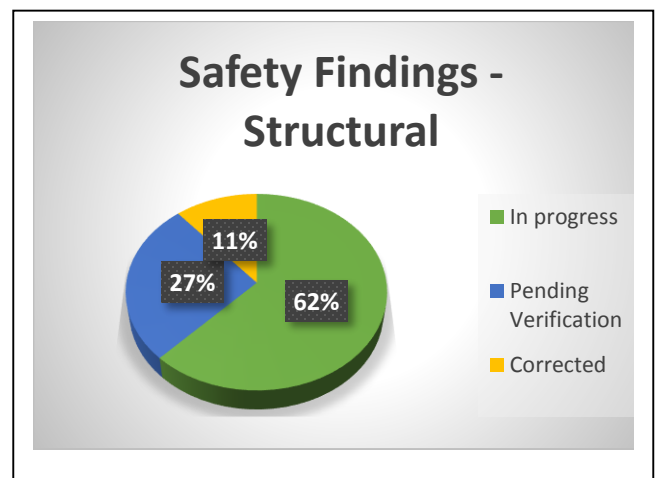
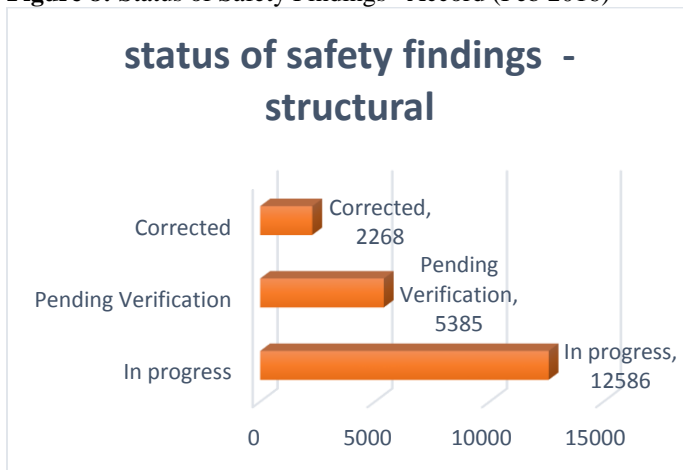
Remediation of electrical issues have shown significant progress as we can see that 77% of electrical issues either have been corrected or pending verification by the Accord authority.

**Figure 7: Status of Safety Findings –Accord (Feb 2016)**



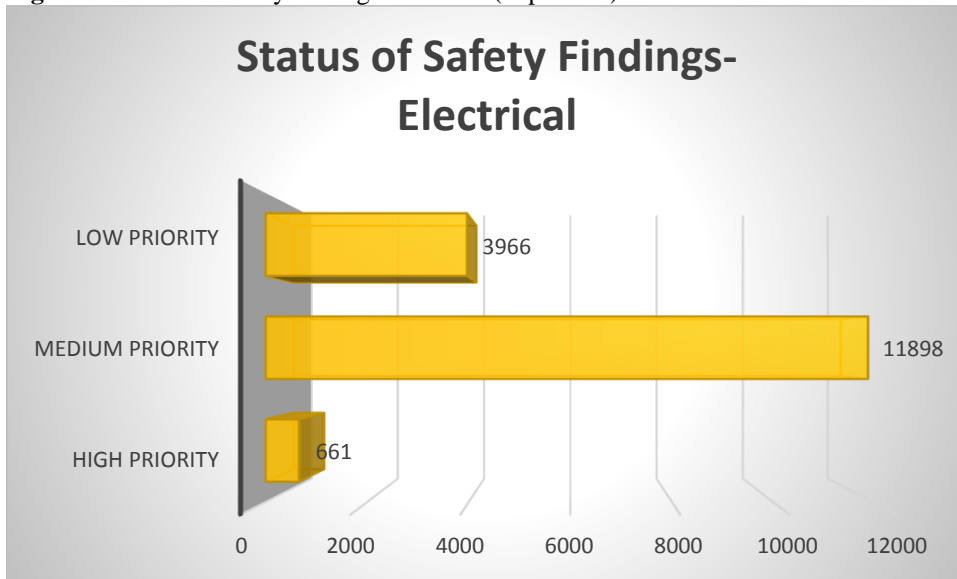
More than half of all safety issues (Total: 35,576) related to fire are still in progress implying slow progress in this area.

**Figure 8: Status of Safety Findings –Accord (Feb 2016)**



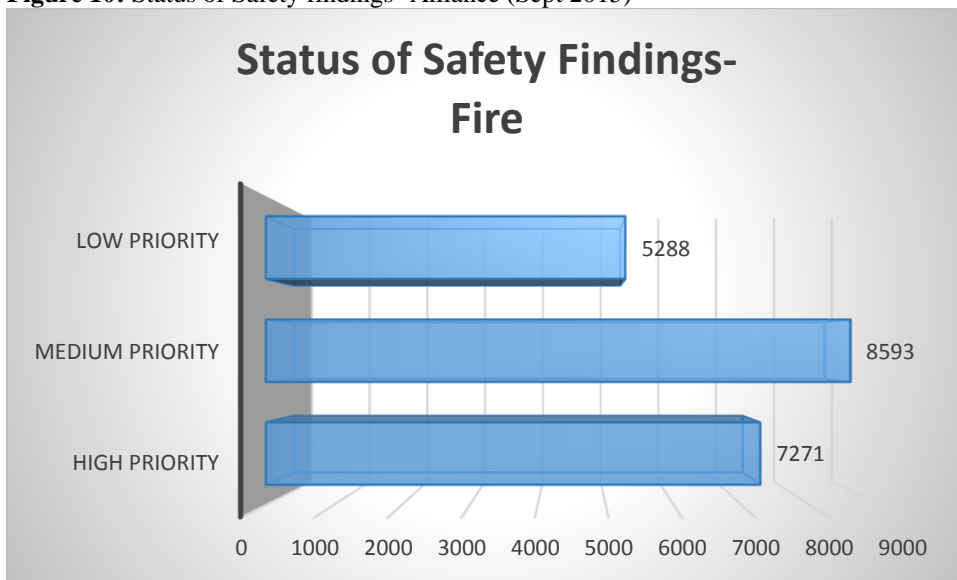
More than 60% of all structural issues (Total 20239) are still in progress showing least progress among all electrical, fire and structural issues.

**Figure 9:** Status of Safety findings- Alliance (Sept 2015)



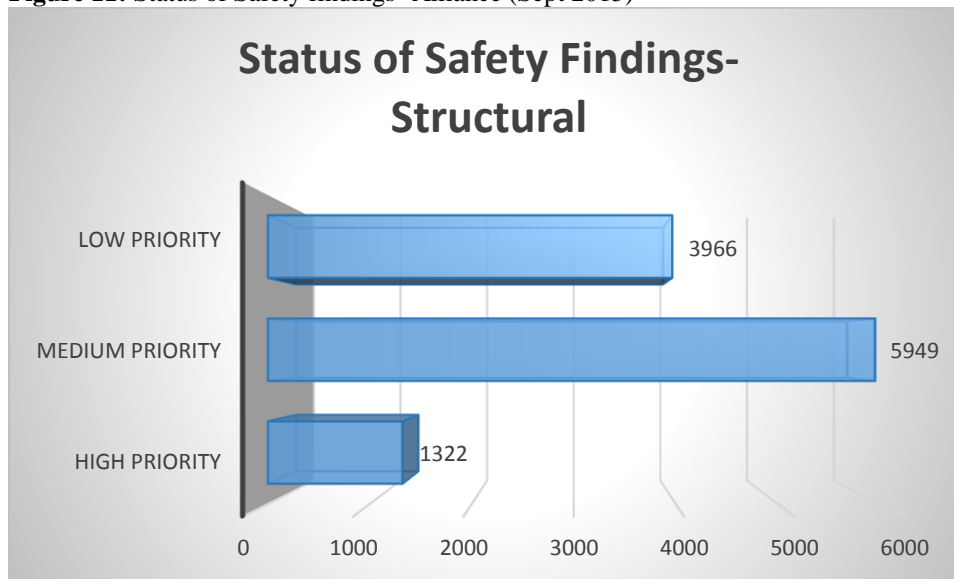
More than 70% of electrical issues identified by Alliance fall into medium priority level while only 4% are in high priority.

**Figure 10:** Status of Safety findings- Alliance (Sept 2015)



35% of all fire related issues are on high priority level and 75% of all fire related issues either fall into High or medium priority level showing a lot of remediation need to be done in this sector.

**Figure 11:** Status of Safety findings- Alliance (Sept 2015)



More than 50% of all structural issues (11237 total) fall in medium priority level.

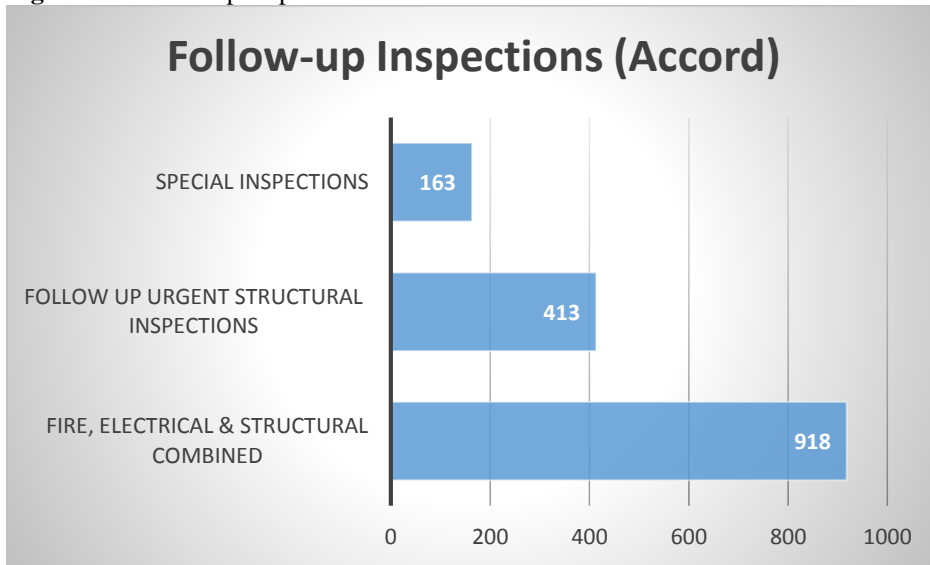
## 5.2 Follow-up Inspections

Apart from the follow-up inspections for fire, electrical and structural issues to confirm the CAP implementation, one team of structural engineers inspects factories with major structural issues requiring immediate action. The objective of the structural follow up inspection are as follows:

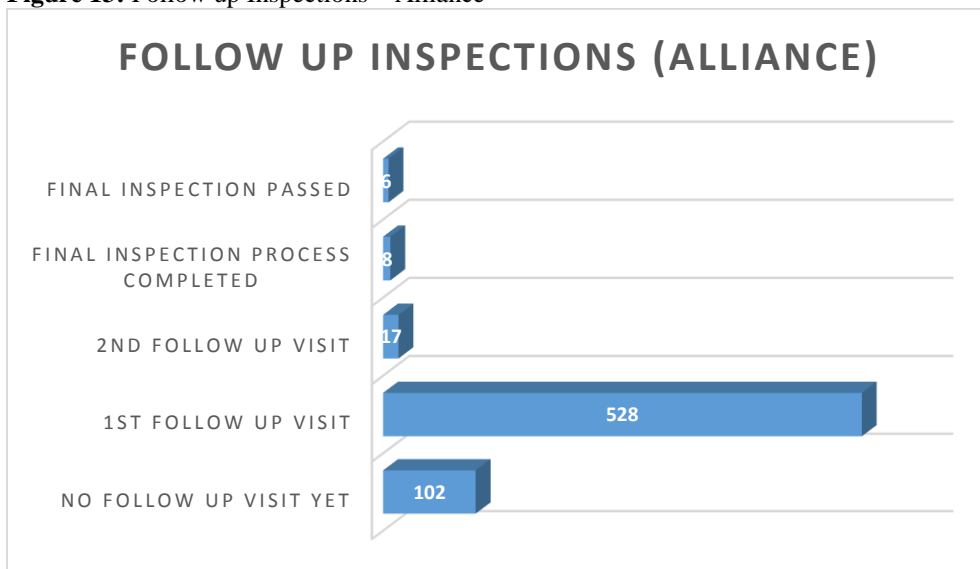
- To verify if required immediate actions were taken
- To verify the information provided in the DEA is correct
- To verify retrofitting work

The Accord also carries out special inspections in case of safety complaints and fire incident investigations. The Accord and Alliance carried out special inspections in response to a 7.9 magnitude earthquake in Nepal on April 25, 2015 as the tremors felt in Bangladesh.

**Figure 12:** Follow up Inspections – Accord



**Figure 13:** Follow up Inspections – Alliance



After the follow up inspections, the engineers of Accord/Alliance generate a detailed report with the revised CAPs. This report is sent to the factory management, company signatories and union representatives. The revised CAP is published on the Accord and Alliance websites respectively which shows the progress status of each finding and includes any new findings.

If the Accord/Alliance engineers are not satisfied with the remediation process or finds non-cooperation to meet the expectations, they issue a non-compliance letter to the factory, the company signatories and labor representatives. If no actions are taken following the letter or do not properly engage to make enough progress, factories are required to be removed from the compliant factory list.

## 6. WORKER EMPOWERMENT AND TRAINING

Both Accord and Alliance address worker empowerment and training.

### The Accord Team

Accord has a worker participation program with workers and factory owners. The objective of this program is to create a safe environment and to create a culture of ownership by empowering workers and supporting factory owners.

It has implemented a system to address safety concerns which are not properly handled at the factory level. Workers and employees will have access to this complaint mechanism. The job of the compliant handling team is to investigate and solve or facilitate issues regarding health and safety. If it's a technical complaint, Accord engineers will be involved in the process. The mechanism will protect the worker from discrimination for submitting a complaint to Accord.

The Accord will also facilitate the election of safety and health committees in each factory that it covers to address the health and safety issues on a day to day basis.

### The Alliance Team

The Alliance has started some comprehensive initiatives toward ensuring worker empowerment and training. It established the following:

- A board labor committee consisting of local labor leaders has been established which advises on labor issues and labor engagement strategies.
- The establishment of a Worker Displacement Fund which pay 50% of worker salaries for up to 4 months when workers are displaced due to safety issues.
- The largest initiative for worker empowerment was the launch of 'Amader Kotha' or 'Our Voice' – a helpline for workers to anonymously report immediate safety concerns. As of September 2015, 414 factories have been covered and on average receives 1700 calls per month.
- Alliance has trained 1.1 million workers under the Basic Fire Safety Training Program which, till now, is the largest training program on Fire Safety in Bangladesh.
- It has launched a Security Guard Training program focusing on fire safety and the role of security guards in case of emergency. AS of Sep 2015, Alliance has trained 13,800 security guards in 650 factories.
- Alliance teamed up with University of Texas Health Science Center in Houston in partnership with Dhaka University to carry out a comprehensive impact assessment of the safety training methods to measure their effectiveness and recommend improvements. The assessment concluded that knowledge and awareness has increased among the workers after participating in the Alliance training.

## 7. BETTER WORK PROGRAM

The Better Work is a joint collaboration between the ILO and IFC. Its objective is to improve working conditions and foster competitiveness in the global garment industry. The Better Work Bangladesh program started its operation in Bangladesh in late 2014. The model's ultimate objective is to encourage factories to take full ownership of compliance concerns. Each factory carries out a self-evaluation process with the guidance of Enterprise advisors and then moves to the steps of creating factory improvement plans, identifying compliance deficiencies and the ability to resolve compliance issues. As of December 2015, 94 factories have registered for the Better Work program. As only a little more than one year has passed since its inception, it is too early to evaluate the progress of this initiative. However, some examples of activities are meetings conducted to prepare compliance improvement plans, training on developing financial and supervisory skills, promoting industrial relations and workplace cooperation, pilot factory assessments etc.

## 8. CHALLENGES

Despite the multi-faceted and comprehensive initiatives by the Alliance and the Accord along with the government led NTPA, formidable challenges remain in this sector which needs to be overcome to keep the efforts sustainable in the long run.

- A significant number of factories have failed to make progress on remediation within the specified timeline making the remediation process slower than expected.
- The lack of a substantial number of experienced structural engineers to carry out the DEAs and the limitation of Bangladesh Government to enforce building regulations.
- Absence of local manufacturers of fire doors, sprinklers or fire safety related accessories. Low quality or counterfeit equipment and accessories resulting in slow remediation progress for factories.
- Frequent political unrest makes the day to day operations difficult and in some cases risky.
- Despite repeated efforts, unauthorized subcontracting is a continuing problem in Bangladesh which is creating roadblocks in establishing an accountable and transparent RMG sector.
- The government led initiative NTPA has seen much slower progress in implementing the system of CAP and DEA. Furthermore, the country needs more extensive labor law and strict enforcements [3][4].

## 9. SUMMARY

The inspection process under the two initiatives has seen significant progress in terms of total number of factories inspected and total number of approved CAPs. As of Nov 2015, 76% of 1677 factories covered by Accord has been inspected and 65% of CAPs (1085) have been approved by Accord. As on Sep 2015, 100% of 662 factories have been inspected and almost 90% (591) have been approved by Alliance. The remediation phase has shown slower progress than expected for both the initiatives. 96% of all factories covered under Accord are either behind schedule or CAP not finalized. Similar case is observed for Alliance where 95% of the factories are either behind



schedule or CAP not finalized. However, a CAP is marked Behind Schedule even if just one item has passed the specified deadline for correction. For that reason, even if factories are behind schedule that does not necessarily imply that no progress has been made.

While both Accord and Alliance have launched programs for the enhancement of worker empowerment and training, the launch of ‘Amader Kotha’ or ‘Our Voice’ by Alliance has been a crucial and impressive addition – a helpline for workers to anonymously report immediate safety concerns. The largest training program on Fire Safety in Bangladesh by Alliance for 1.1 million workers was also a great achievement in preparing the workforce for future safety.

Though both Accord and Alliance have made significant progress in building capacity in a developing country like Bangladesh still a number of challenges remain. Unauthorized subcontracting has become an established source in the RMG sector in Bangladesh as a means of increasing profits, increasing production capacity [7][8]. Obviously this is a major obstacle in establishing an accountable and transparent RMG sector. If this shady practice is not brought under close scrutiny further tragic events will be difficult to prevent.

The government of Bangladesh needs to revamp its regulatory system and strictly enforce building and structural regulations. Accord and Alliance only covers a fraction of the total RMG factories in Bangladesh. The remaining factories, many of which are unregistered should be brought under the supervision of regular inspection to conform to established industry standards. The Bangladesh Government should work along with Accord and Alliance in fulfilling the long term objectives and complement each other through effective cooperation.

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# **Boosting the Industrial PyMEs Exporting Performance: A Theoretical Approximation to Internationalization**

LUIS ENRIQUE IBARRA MORALES, PH.D.<sup>1</sup>

*School of International Commerce, Universidad Estatal de Sonora  
Hermosillo, Sonora, México*

MÓNICA BLANCO-JIMÉNEZ

*School of Public Accountant and Administration, Universidad Autónoma de Nuevo León  
San Nicolás de los Garza, Nuevo León, México*

ANA LOURDES PARTIDA GÁMEZ

*School of English Language Teaching, Universidad Estatal de Sonora  
Hermosillo, Sonora, México*

*Given the relevance that industrial PyMEs have had in the national and international economy from an internationalization perspective, competitiveness and success in other markets, it became necessary to analyze the exporting performance of this type of companies. The aim is to determine, from a theoretical perspective, the importance and weight of the factors that improve the PyMEs' exporting performance, increasing its internationalization. A rigorous analysis, theoretical and empiric, of the different models, approaches, economical theories and paradigms of companies' internationalization defined the five factors that can influence this study's subject.*

**KEYWORDS**    *Exporting performance, exportations, internationalization, PyMEs.*

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<sup>1</sup> Address correspondence to Luis Enrique Ibarra Morales, Ph.D. in Administration, School of International Commerce, Universidad Estatal de Sonora, Ley Federal del Trabajo s/n, Colonia Apolo, Hermosillo, Sonora 83100, México. E-mail: [luisim00@hotmail.com](mailto:luisim00@hotmail.com)

## INTRODUCTION

The international panorama and economy globalization reflects the importance of performing studies in the international business area, specifically, the one derived from the internationalization's process of Mexican companies, fundamentally when the exporting management in the Small and Medium Company (PyMEs, by its acronym in Spanish) is considered a field that has not been completely exploited, that is, is important to complement the gaps that could exist in the practice and principles developed by the exporting companies. Particularly, the manner these principles or factors influence its results, as well as in the dynamism and exporting performance, as in the financial aspects and competitiveness position of these companies.

There are diverse perspectives that study the determining factors of the exporting performance of the small and medium companies in the international markets, like the economic perspective, process, network, and more recently from the born global approach, as is shown in Table 1. Each one of the schools has its respective approaches, theories, models and authors, such as: The Internationalization Theory, Dunning Eclectic Paradigm, Uppsala Model, and Vernon Model. Similarly, there are models that evaluate and measure the business competitiveness based on diverse factors such human and material resources, fixed and variable costs, and the impacts in innovation (OCDE, 1992; Esser, Hillebrand, Messner y Meyer-Stamer, 1994), or the well-known Porter's Competitive Diamond Model (1990).

**Table 1.** Main schools and theories about companies' internationalization

<b>School or block</b>	<b>Theories</b>	<b>Authors</b>
Internationalization from an economical perspective	Theory of industrial organization, theory of internationalization, Dunning eclectic theory and the theory of nation's competitive advantage (macroeconomic approach)	Buckley y Casson (1976). Dunning (1980, 1985, 1993, 1998). Porter (1990).
Internationalization from a process perspective	Uppsala model, Vernon product cycle life model, Jordi Canals model, Way Station model.	Johanson y Vahlne (1977, 1990). Vernon (1966). Cavusgil y Knight, 1980, 1996. Reid, 1981. Bilkey y Tesar, 1977.
Internationalization from a network perspective	Network theory, Johanson & Mattson Model.	Welch y Luostarinen, 1988. Aaby y Slater, 1989. Katsikeas, et al., 1995. Johanson y Mattson, 1986.
Born Global Approach	Born Global Phenomenon.	Jolly, Alahuhta y Jeannet, 1992; Knight y Cavusgil, 1996; Madsen y Servais, 1997; McAuley, 1999; Fillis, 2000; McDougall, Shane y Oviatt, 1994; Oviatt y McDougall, 1994, 1995, 1997; Plá Barber y Cobos Caballero, 2002).

Source: Fillis, I. (2001).

For the last four decades, investigations that address the different internationalization strategies used by companies, have been based or followed the actions of large transnational companies or large corporate groups. However, as is pointed by Jean-Paul (2004), despite the recent progress of PyMEs in the international sphere, this process has not been widely studied, that is why often its evolution has been tried to explained with schemes or models formulated for larger companies.

This project will try to show an advance in the study of the PyMEs exporting dynamism from a theoretical perspective, sustained in the studies developed by Milesi & Aggio (2008), about the Exporting Success Index of Latin-American PyMEs, in the Uppsala Model developed by Johanson & Wiedersheim (1975) and Johanson & Vahlne (1977), and adapted by Galván (2003) and lastly, in the studies of Alonso (1994), and Alonso & Donoso (1998), where the exporting dynamism is explained through the rate of change in the companies' exportation in a specific amount of time.

In concrete terms, this investigation is focused in the analysis and studies of the critical factors that impact the exporting dynamism of the PyMEs industrial sector in different regions in the world, and it will establish a theoretical foundation to determine the particular critical factors that will be measured for the Sonoran industrial PyMEs,

#### APPROACH TO THE ISSUE

It is considered important and pertinent to analyze the Mexican industrial PyMEs, due to the internationalization that the Mexican state has with the United States, which allows a very important bilateral commercial dynamic, since the Mexican government has signed different treaties and commercial agreements with other countries in the world, in the interest of companies getting better results derived from its exporting activity.

In general terms, the previous panorama reflects the importance of enhancing the studies related to international business; specifically, the process of internationalization of Mexican companies, especially when the management of the exporting activity, peculiarly in the PyMEs, that is a field that has not been completely exploited. It is important to fulfill the gaps that could exist in the practice and principles developed by the exporting companies and how they influence in its results, financial and competitive position.

In this manner, the intent of this investigation is to determine, from a theoretical perspective, the importance and weight of the proposed critical factors that have an impact in the exporting dynamism of the industrial PyMEs increasing its internationalization. Reason why the following investigation question has been formulated: which are the factors that could have an influence in the enhancing of the exporting performance of the industrial PyMEs from a theoretical perspective?

#### The PyMEs in the international context

A more globalized scenario, which characteristic are the innovation and the adequacy to models of management and strategies, entails the necessity of the national companies to globalize and, therefore, to look for internationalization, which reveals the problems that must be assumed and

solved by these companies, especially in the emergent or development countries in order to reach and internationalize methods, systems and management forms with a determined projection, assuming diverse critical factors of success, as is manifested nowadays in the competitive markets.

Among these factors, is relevant the adoption of diverse competitive strategies, such the price of the exportation product, the technological innovation, the financial capability, the installed production capacity to meet the exportable supply and the total quality of the product, understanding this as the assurance of the quality in the productive processes and the requirements and needs of the customer, tending to its certification (quality certification). Facing this global model and international markets, the enhancing and success of the companies intervening will depend on the ability to meet the demands and tendencies of the market.

The business sector more affected in this globalized scheme, seems to be the one denominated as PyMEs, since the opening of borders due to the Free Trade Agreements and the worldwide trade liberalization, according to the norms of the World Trade Organization (WTO), is forcing these companies to adequate to the new competitive rules, productivity, quality and technological innovation; in this regard, the scenery changes and the economic paradigms that regulate the international market, constitute important factors in the survival and growing of the PyMEs.

On the basis of the foregoing, is established that the exporting success of the PyMEs is highly important to a country's economical development, considering that is the currency primary source, allows obtaining economies of scales and a unique grade of specialization, access to new technologies and attract direct foreign investment (Lall, 2000). Therefore, countries pursuit to adopt programs and measures that allow them developing and promoting its products exportation.

## THEORETICAL FRAMEWORK

It is important to understand the internationalization before addressing the issue of exporting performance and the diverse phenomenon that explain it. Internationalization can be explained through the international business growing and the companies' direct investment abroad, import and export business, financial or production relations, manufacturing products in other countries or domestic in other cases, as well as the result of business cooperation.

Expansion in other countries provides to the developing companies a significant increase in the sales of their products, and as a consequence, fixed assets' higher yield, likewise, the companies can access to better suppliers of raw materials, products, better qualified workforce at a lower cost, and even obtain, better technological capacity in other countries that could allow them to enhance their experience and knowledge in export markets. (Villarreal, 2005). Reason why the internationalization process is added to the companies' management activity as a strategy of incursion in the foreign markets, turning into a matter of study in the international business area.

In this respect, the PyMEs exporting dynamism has been explained in numerous empirical studies through the growth rate of international sales, since it represents a precise and objective measure, besides being sustained through the export success index. Additionally, the Uppsala

Model theoretical base and the studies made by Alonso (1994) and Alonso & Donoso (1998), defend the measuring and explanation of that variable, which are introduced next.

### Internationalization's theoretical analysis

Companies' internationalization began to be studied in the 50's decade, when American companies started to make significant abroad investments, mainly in Europe. The first studies, based on Dunning's eclectic theory (1980), tried to explain and identify the country, market or sector factors that determined the causes for a company to make a Foreign Direct Investment (FDI). In this way, at the end of the 70's the expansion of economic transactions through the national borders reflects an increase in the global market, showing that the internationalization processes acquire more relevance in the international economy, in a way that no country can escape from the effects of this unstoppable change (Milner y Keohane, 1996).

In the last decade, the internationalization process is more evident and generalized. The financial crisis, the growing interdependence among countries, the creation of regional blocks, the emerging of new economies, as well as the permanent technological advances at all sectors shape a global and changing competitive environment. As a consequence of this continuous change, it can be seen a significant increase in the number of companies that operate internationally, considering it as a basic pillar for its survival (Leonidou et al., 2002).

In recent years, the import-export strategies have obtained significant attention due to various reasons. First, previous studies have shown that, especially in small and medium companies, the order of the most common commercialization operations of internationalization is to the inner local market, and only after that, to external or foreign markets (Jones, 1999; Korhonen, 1999; Samiee et al., 1993; Welch y Luostarinen, 1988, 1993).

Second, other studies have found that importing has worked as a platform to exporting, e.g., boosting importation can create opportunities for international business (Karlsen et al., 2003; Korhonen, 1999; Welch y Luostarinen, 1993).

Third, there are a considerable number of investigations that address the internationalization strategy with a network perspective that emphasizes the significance of the personal contacts and business partners' abroad (Forsgren, 2002; Holmlund y Kock, 1998; Johanson y Mattsson, 1988; Johanson y Vahlne, 1977). All these studies provide a theoretical foundation to the internationalization analysis described in this article.

Therefore, it is important to understand the internationalization before dealing with the topic of the exporting dynamism and the diverse phenomena that explain it (independent or explicative variables). In that manner, an accurate definition is the one provided by Villarreal (2005).

*A corporate strategy of growing by an international geographic diversification, through a long term evolving and dynamic process that gradually affects the different activities of the value chain and the companies' organizational structure, with a commitment and increasing*

*involvement of its resources and capability with the international environment, and based in an augmentative knowledge (Villarreal, 2005:122).*

After performing a theoretical analysis, the different theories and models that explain the internationalization process have been associated in four large groups or perspectives: 1) internationalization from an economic perspective, 2) internationalization from a process perspective, 3) internationalization from a network perspective, and 4) Born Global approach.

In each one of these perspectives it was realized a search of theories and models that explain the internationalization phenomenon. Finding that from an economic perspective, it has the following theoretical foundations: (a) industrial organization theory; (b) internationalization theory; (c) Dunning eclectic theory; and (d) the theory of nation's competitive advantage or macroeconomic approach.

About the group of theories that explain the internationalization phenomenon from a process perspective they have: (a) the Uppsala model; (b) Vernon product life cycle; (c) Jordi Canals model, and (d) Innovation model or Cavusgil model. The theories that explain internationalization from a network perspective, they have: (a) the network theory, and (b) Johanson & Mattson model. Lastly, the Born Global approach or phenomenon, which explains the new companies' internationalization process, from different factors, an emergent perspective of the XXI century.

In a more analytical manner, in Table 2a and Table 2b, are shown the main contributions that each school or theory have done to the study of companies' internationalization.



**Table 2a.** Principal schools or contributions to the study of internationalization

<b>Group</b>	<b>School or theory</b>	<b>Principal contributions to the study of internationalization</b>
Internationalization from an economic perspective	<p>Industrial organization</p> <p>Internationalization</p> <p>Dunning eclectic paradigm</p> <p>Macroeconomic approach</p>	<p>The exploitation of a company's exclusive competitive advantage when moving into an international market explains the arise of the foreign direct investment</p> <p>The internal activities of a company must be more efficient than submit them to a company abroad.</p> <p>The extension, form and international pattern production of a company are based in the companies' specific advantages, the preference to internationalize external markets and the appealing of producing in those markets.</p> <p>The strength factors as the demand, support and related industries, strategies, infrastructure and brands rivalry try to explain the way companies develop competitive advantages in competitive markets.</p>
Internationalization from a process perspective	<p>Uppsala model</p> <p>Product cycle life</p> <p>Jordi Canals model</p> <p>Cavusgil model</p>	<p>The company will gradually increase its committed resources in a specific country as acquire experience in the activities done in that market.</p> <p>Internationalization is based in Vernon's product cycle life (1966), which proposes that the process evolves when the product moves, in its life cycle, from one stage to another.</p> <p>Companies follow gradual and sequential process of three stages at the moment of its internationalization and commitment level with the new business unit.</p> <p>The decision of going to external markets becomes with the innovation progress applied in products and processes.</p>

**Table 2b.** Principal schools and contributions to internationalization studies

<b>Group</b>	<b>School or theory</b>	<b>Principal contributions to the study of internationalization</b>
Internationalization from a network perspective	Network theory  Johanson & Mattson model	Companies become internationalized by network through establishing and nurturing partners' relations, international extension, and the introduction and international integration. When companies become international, create and develop networks, through business relation with their foreign countries' counterparts.
Internationalization from Born Global approach	Born Global approach	Relates the presence of Born Global companies with three important factors: a) new market conditions; b) technological development in production, transportation and communication areas, and c) people's most developed abilities.

#### Factors that affect the exporting performance

There are a high number of studies and empirical works that shown the influence that the different variables/factors produce in the companies' exporting dynamism. In this preliminary study are introduced the critical factors considered to have an effect in the explained variable (y). Some of them are shown in Table 3, where it is specified the type of study realized, results and relations in terms of the variables studied.

**Table 3.** Studies realized in terms of the exporting performance variables

<b>Variables studied</b>	<b>Author(s)</b>	<b>Type of analysis</b>	<b>Relations and results</b>
R & D activities Marketing capacity Unique product	Leonidou, et al., (2007)	Meta-analysis	Export propensity and intensity: Positive Not significant Positive
R & D investment Price competitiveness Product quality Production technology	Eusebio & Llonch, (2006)	Multiple regression	Export intensity and dynamism: Positive Positive Not significant Positive
Quality product	Brooks (2006)	Multiple regression	Export intensity and dynamism: Positive
Innovation Usage of new technologies	Ibeth (2003)	Analysis of variance, ANOVA	Export propensity : Positive Positive
R & D activities Manufacturing capacity Marketing capacity	Guan & Ma (2003)	Multiple regression	Export intensity: Positive Not significant Positive
Product innovation R & D investment Capital	Rodríguez (1999)	Regression	Export propensity and dynamism: Negative Positive Positive
R & D in products New products Efficient management Quality product Product design	Keng & Juan (1989)	Multiple discriminant analysis	Export propensity and dynamism: Positive Positive Not significant Not significant Not significant

## METHODOLOGY

This is an exploratory and descriptive research, since an exhaustive exploratory analysis of literary is realized in order to describe theoretically the factors of the export's performance. Is a basic scientific research not experimental, given that will provide new knowledge since the phenomena is observed as it happen in its natural context and a profound analysis about theoretical and empirics studies is made. A deductive, comparative and analytical method is used, with a theoretical approximation of internationalization.

Therefore, the aim of this research is to determine the factors that influence and improve the export performance of the industrial sector's PyMEs, from a systematic literary revision based on evidence of theoretical and empiric studies that allow contextualizing the theoretical framework of the field investigation intended to carry in the future as the second phase of this study.

The proposed hypothesis is that the factors, as influence to increase the industrial PyMEs internationalization, through its export performing are: the exportable price of the product, quality product, production installed capacity, innovation capacity and financial capacity.

## RESULTS

In a more specific and detailed way, and based in the study of the theoretical framework, the following factors are proposed as determinants to increase the industrial PyMEs internationalization through its export performing: the exportable price of the product, quality product, production installed capacity, innovation capacity and financial capacity.

Regarding the factor of exportable price of the product. This not only affects selecting where and how to export, but elements as currency strength, target market, INCOTERMS, supply elasticity, costs structure, international and competitors prices, among others. All these elements influence in the strategic decision of determining the export price (Cavusgil, 1990).

The quality product factor consists in achieving the compliance or adaptation of the group of characteristics and attributes of a product or a service, with the needs and expectations of the customer (Miñarro & García, 2003).

In the case of the production installed capacity factor is essential to satisfy the export offer in terms of producing and satisfying international demand. The production installed capacity facilitates the increasing of productivity, reducing costs' structure without reducing quality standards or the product's market orientation (Melle y Raymond, 2001). Summarizing, there is an increasing in the importations when the productive system becomes more automatized and a higher technological content, for the reason that facilitates the companies to respond more efficiently to export offer and consumers' preferences (Tracey et al., 1999).

The innovation capacity factor considers that company's innovation is fundamental to maintain competitive advantages, in the scheme of competency process and differentiation stimulated by a context more globalized. In a simple way, for Valls et al. (2003), innovation represents for the company the introduction of a technic change in products or processes. Likewise, innovation capacity modifies the companies' export behavior, establishing the basic element, through which they can increase international competitiveness, and by that, its performance and export dynamism (Roper & Love, 2002; Wakelin, 1998; Hitt et al., 1990).

Lastly, the financial capacity factor of a company is measured through the availability of the financial resources needed to carry out the export plan. Worldwide authors and empirical and theoretical studies, as the one realized by Martínez Villavicencio (2006), have demonstrated that having a successful business incursion in international markets, the PyMEs required of an important investment of financial resources, in order to include markets exploration, from visiting and dealing with contacts, until deciding the export strategy and the competence with suppliers of the same product in the country destination of exportations.

In this manner, it can be deduced that the internationalization process of the PyMEs export companies is under an empirical and theoretical investigation (Cavusgil y Godiwalla, 1982; Dichtl et al., 1984), and it seems to be beneficiated with a literary general acceptance (cf. Bradley, 1991; Reid y Rosson, 1987; Welch y Luostarinen, 1988).

## CONCLUSIONS

It is indispensable for companies to adopt active policies associated to a higher investment in infrastructure, innovation, and science and technology, in addition to policies of inclusive financing to bolster the small and medium companies. However, in a general way, export companies from emerging countries have more difficulties to compete successfully in the international context, especially the PyMEs, since many of these companies lack of resources, a stimulating business environment, competencies and competitive advantages needed to achieve success in international markets (Lall, 2000).

In consequence, it is critical that exporting PyMEs and government agencies identify the factors that influence and improve exportations and allow them to increase a sustained competitiveness, and at the same time, those factors could improve the business strategies and public polices be focused for its development; as for the theoretical contribution of this article is the proposal of the following factors as decisive in the industrial PyMes export dynamism: (1) product exportable price, (2) quality product, (3) production installed capacity, (4) company's innovation capacity, and (5) company's financial capacity that as a whole will be the explicative variables of the regression model and the own variable that will measure the export performance from the perspective of the companies' development.

On the basis of the foregoing, it can be given an affirmative answer to the investigation question formulated in the present investigation, considering that there are sufficient theoretical and empirical studies to argue the proposal of the factors that improve the export performance, according to literary and construction of the theoretical framework realized.

It is important to mention that in the second stage of the study it will be determined the importance order and incidence weight of the factors in the PyMEs export performance; on the one hand, it may be found the strength; on the other hand, the companies requirements in the international context, and with that establish internationalization strategies to obtain a competitive position through exportations in foreign markets.

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# **Factors Influencing Domestic Supplier Development from Multinational Subsidiaries in the Manufacturing Industry of Mexico**

OSCAR ELÍ VELARDE MORENO<sup>1</sup>  
*Universidad Autónoma de Nuevo León  
San Nicolás de los Garza, Nuevo León, México*

MÓNICA BLANCO-JIMÉNEZ  
*Universidad Autónoma de Nuevo León  
San Nicolás de los Garza, Nuevo León, México*

ABEL PARTIDA PUENTE  
*Universidad Autónoma de Nuevo León  
San Nicolás de los Garza, Nuevo León, México*

*The impact of multinational subsidiaries or Foreign Direct Investment in local economies had been subject of debate for years (Hirshman, 1958). Recently the researchers and government institutions in México are being attracted to the subject because of the interest on the impact of foreign multinational subsidiaries that operate as an anchor company of a value chain, and more specifically in the local supplier development. Several researches have surged through time to measure the impact of multinationals subsidiaries in value chains. Some of them based on local procurement ratio (Driffield & Noor, 1996; Turok 1993; UNCTAD, 2001), others based on the degree of transfer technology that occurs between the anchor multinational subsidiaries and their suppliers (Halbach, 1989; UNCTAD, 2001). And finally the ones which centered their attention to economic spill overs and regional development (Bloomster and Kokko, 2001; Javorick, 2004).*

*The following paper is presented to add further knowledge in the impact of multinational corporations and their subsidiaries in host countries. The purpose of this research, is to determine which factors are influencing domestic supplier development from multinational subsidiaries in the manufacturing industry of Mexico. The factors considered in the theoretical model are the size of the firm, autonomy of the firm, market orientation of the firm, the experience of the firm and the technological complexity of the firm products.*

*This pilot test was elaborated in order to meet the validity and reliability criteria of the measurement tool. A questioner of 47 items was conformed and applied to 10 sourcing managers from 10 multinational subsidiaries in the manufacturing industry. Data were subject to a multiple regression analysis using the statistical package PLS.*

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<sup>1</sup> Address correspondence to Oscar Elí Velarde Moreno, Facultad de Contaduría Pública y Administración de la Universidad Autónoma de Nuevo León, Ave. Universidad s/n, Ciudad Universitaria, San Nicolás de los Garza, Nuevo León, 66451 México. E-mail: [oevelarde@gmail.com](mailto:oevelarde@gmail.com)

## INTRODUCTION

The following paper is presented to add further knowledge in the impact of multinational corporations and their subsidiaries in host countries, the country considered in this investigation is Mexico because of the high perception of Foreign Direct Investment and more specifically the manufacturing industry of Mexico.

In the first and second part the context of the previous investigations are presented along with the declaration of the purpose of the studio, in where the variables proposed for the theoretical model are introduced. Then the research questions are presented followed by investigation objective, justification and hypothesis.

The third part of this paper is conformed by the theoretical model when the independent variable is presented. There the independent variable is defined, previous investigations are presented and the importance of its inclusion. Dependent variables are presented in succession in the same pattern as independent variable.

And finally the results and conclusions of the pilot test are presented where the theoretical model and their results are explained in PLS graphics revealing the Chrombach Alfa and at which proportion the model can be explained with the proposed variables. Finally Conclusions and final remarks are presented.

### 1. CONTEXT

The impact of multinational subsidiaries or Foreign Direct Investment in local economies had been subject of debate for years (Hirshman, 1958). Recently the researchers and government institutions in México are being attracted to the subject because of the interest on the impact of foreign multinational subsidiaries that operate as an anchor company of a value chain, and more specifically in the local supplier development.

Several researches have surged through time to measure the impact of multinationals subsidiaries in value chains. Some of this investigations measured this impact based on local procurement ratio or the increase in the amount of local suppliers (Driffield & Noor, 1996; Turok 1993; UNCTAD, 2001).

There are other investigations focused in measure the supplier development based on the degree of transfer technology that occurs between the anchor multinational subsidiaries and their suppliers, that's because in theory, Multinational subsidiaries are equipped with better technology and knowhow (Halbach, 1989; UNCTAD, 2001). And finally there are other studies that which centered their attention to economic spill overs caused by FDI inflows or the influence of multinational subsidiaries in regional development (Bloomster and Kokko, 2001; Javorick, 2004).

Although several studies on the impact of multinational subsidiaries have been documented in literacy (Blomstrom, Kokko, & Zejan, 2000; Giroud, 2003; 2007; Rodriguez-Clare, 1996;

UNCTAD, 2001; Alkhatatneh, 2011), there's a lot of uncertainty and unpredictability concerning this phenomenon on certain countries and industries.

## 2. METHODOLOGY

According to literature analysis about the relevant factors related to the context of this investigation, several authors assessed that the size of a subsidiary contributes to a certain extent in domestic supplier development (Giroud, 2003; UNCTAD, 2001; Tavares and Young; Paus, 2005; Giuliani, 2008; Alkhatatneh, 2011).

Many authors suggest that the degree of subsidiaries autonomy in sourcing decisions, regarding their central offices, can influence the amount of local procurement and supplier development (Lucker et al., 1994; Giroud and Mizra, 2006; UNCTAD, 2001; Dicken, 2003; Tavares and Young, 2002; Imán and Nagata 2005; Meyer 2004; Jindra et al., 2009).

There are several researches demonstrating that the companies with an export market orientation tend to import components to a larger extent than companies that have a local market orientation (UNCTAD, 2000; Altenburg 2000) Belderbos et al, 2001; Smarzynska, 2002; Dicken 2003; Alkhatatneh, 2011). Perhaps this behavior is affected by the external market barriers of different countries.

Some studies show that the subsidiaries with more experience inside the host country tend to increase local supplier development (Guiliani, 2008; Giroud, 2003; Tavares and Young 2002; Lall; 2004). Based on literature it can be observed that technological complexity of the multinational subsidiary products can discourage domestic supplier development (Fuji, 2006; Moran, 2005).

According to the elements found in the aforementioned studies, the factors considered to determinate supplier development are the size of the firm, autonomy of the firm, market orientation of the firm, the experience of the firm and the product technological complexity of the firm. The purpose of this research was to add further knowledge regarding domestic supplier development of multinational subsidiaries in the manufacturing industry, and contribute with a new research study in Mexico's context.

### Research Question

Which are the factors contributing to local supplier development in Multinational Firms in Monterrey Nuevo León manufacturing industry?

### Objective

Determinate which factors contribute to local supplier development in multinational subsidiaries established in the city of Monterrey Nuevo León and their impact.

## Justification

Supplier development is a subject very relevant in this days. In Mexico there are several institutions focused in contribute to supplier development of domestic firms in the Value Chains (Clelac, 2015; SEDEC, 2015). It is believed that the interest of CLELAC and SEDEC on the subject can aid to further collaboration on this investigation.

There is also the fact that there are not many investigations regarding domestic supplier development in Mexico and Nuevo Leon. Moreover the technological factor considered in this investigation can add further information on supplier development of domestic suppliers.

The theoretical model used on this investigations incorporates many of the variables commonly used on previous investigations, adding the variable technological complexity of the firm products. With this new addition it is expected to contribute in further models.

## Hypothesis

There´s a direct relationship between multinational subsidiaries local supplier development and factors such as the size of the firm, autonomy of the firm, market orientation of the firm, the experience of the firm and the product technological complexity of the firm.

### 3. THEORETICAL FRAMEWORK

#### a. Local Supplier development

Supplier development is one of the factors in which the impact of multinational corporations can be measured. Usually the terms associated to the impact on suppliers are backward linkages and transfer technology.

The term backward linkage is defined in the literature as the relationship between companies where one company buy inputs regularly from one or more companies inside the value chain (Battat et al., 1996). There are forward and backward linkages, where backward linkages refers to suppliers and forward linkages to distributors and sellers, but some researchers agree that backward linkages are more important (UNCTAD, 20001; Lall, 1996). Normally literature measures supplier development on the local procurement percentage (Brannon et al.; Turok 1997).

On the other hand Supplier development is also measured according to the transfer technology level, where technology transfer refers to training, equipping and several types of assistance including financing and sharing knowledge (alkahatatne, 2011).

In the literature there are different models applied in diverse countries, sometimes to a certain industry and other occasions on more than one sector such as garment industry and electronics.

A comparative study was conducted between Vietnam and Malaysia (Giroud, 2007), regarding backward linkages formed between local suppliers and multinational subsidiaries, the results

where significant, and revealed that subsidiaries in Malaysia had a tendency to create more linkages with their domestic suppliers than Vietnam subsidiaries. Another research in Jordania (Alkhatatneh, 2011) showed that most of the proposed factors affected local sourcing and technology transfer between subsidiaries and suppliers.

#### b. Size of the firm

The size of the firm measuring could differ on each country, the most commonly used factors to accomplish the task are total annual sales, total of employees, annual income and total assets (INEGI, 2009).

In Mexico the criteria to determinate the size of the firm rests in the “Diario oficial del la federacion” (2009), in which is established that the size of the firm can be defined according to the total employees and annual sales. There are four types of sizes: Micro, small, medium and large. Besides, the range of total employee and annual sales oscillate depending on the type of sector, according to the Diario Oficial de la Federación (2009), there are 3 sectors in Mexico being those commerce, industry and services. For purposes of this research, the sector considered is industry, and the medium and large company sizes. We understand that a medium company have between 51 and 250 workers and sales oscillating between 4 and 100 million pesos, and large companies have more than 250 workers and sales over 100 million pesos.

In this study the size of the firm would be defined according to “El Diario oficial de la Federación” (2009), that’s because the data is going to be gathered in Mexico and also is very similar to the standards employed by OECD and European Union to quantify the size of the firm.

Also there are certain investigations in the literature (Alkahtahtneh, 2011) that define the size of the firm exclusively on total workers, this due difficulties in measuring standards in certain countries.

In Venezuela, (Alitken and Harris, 199) a study was conducted to asses if multinational subsidiaries where benefiting local suppliers, they concluded that size of the firm can be measured trough sales return, total assets and total number of workers.

There are Scientific Researches that demonstrated that size of the firm influenced supplier development, in those, Giroud (2003) found that large subsidiaries where less oriented to local sourcing, but they established more significative linkages. Other studies revealed (Tavarez & Young, 2002) that the relationship between size of the firm and local sourcing was not significant. Dirffield and Noor concluded that once the transaction costs where included, the size of the firm is a less important factor.

However another research was conducted in Jordania (Alkhatatneh, 2011) where the size of the firm was included as an independent variable. The model intended to prove that the size of the firm was a factor influencing in the extent of transfer technology exchanged between multinational subsidiaries and local companies. Results showed that subsidiaries with more than 214 workers,

had more technology transferred than the subsidiaries with less than 214 workers, therefore larger companies invest more in supplier development than smaller ones.

In this investigation the size of the firm is considered in the theoretical model due the findings in previous researches, even when there are mixed results, there is sufficient evidence in literature to take it into account.

### c. Market Orientation

Initially it was thought that FDI in developing countries was a logical strategy of multinational corporations, this due low labor costs (Vernon, 1966) Eventually Dunning (1993) defined this strategy as export oriented Foreign Direct Investment. In order to achieve this, three conditions must be accomplished such as ownership advantage, location advantage and internationalization advantage.

However Kumar (1996) found in his research that not every Foreign Direct Investment was export oriented, given that in 1992 North American Affiliates of multinational corporations exported only 34% of their production, this despite Japan Affiliates exported around 75.3% of their total production.

According to UNCTAD (2001), Market orientation of a subsidiary, is a Foreign Direct Investment strategy of a multinational corporation. It's been said that a companies had a market export orientation when a subsidiary is established in a host country focusing particularly in export activities and that non export oriented companies are the ones that are focused in the domestic market.

Smarzynska (2002; 2004), considered that there were 3 levels of market exportations. In the first level subsidiaries exported between 1 and 33% of their total goods, in the second level exportations oscillated between 34 and 66% and in the third level exportations surpassed 66%. In another study export market orientated subsidiaries where the ones with exportations above 51 percent of their total goods exported and domestic market orientated firms where those with exportations lower than 50 percent of their total production.

Literature analysis suggests that market orientation of the firm is related to supplier development. It's being suggested that domestic oriented subsidiaries develop their suppliers more often than export oriented ones (UNCTAD, 2001). Altenburg (2000) found that export orientated subsidiaries generated less backward linkages but they were more competitive and sustainable than the ones of domestic oriented firms.

Smarzynska (2002; 2004), in Lithuania conducted a research arguing that domestic oriented subsidiaries generated more backward linkages than export oriented firms. The results showed that domestic oriented firms where the only ones generating significant backward linkages.

Another research (Alkhatatneh, 2011) in Jordania aimed to demonstrate that domestic oriented subsidiaries where the ones transferring technology to domestic suppliers to a larger extent than

export oriented subsidiaries. The results indeed displayed that domestic oriented companies transferred more technology to their local suppliers.

Perhaps a possible explanation for this behavior is that export oriented subsidiaries have higher quality standards depending on country destination of goods. Those higher standards represent a stumbling block to domestic supplier development (Altenburg 2000; Balderbos et al 2001; Smarzynska 2002; 2004; Alkhatatneh 2011).

For example in the electro domestic industry there are several quality barriers according to destination country, some of those are quality norms as: UL (Underwriters Laboratories), CSA (Canadian Standards Association), European Conformity (CE), Deutsches Institut Für Normung (DIN), American Society for Testing and Materials (ASTM) and TÜV Rheinland (PROMEXICO, 2010).

In this investigation the importance of market orientation variable it's based on the fact that it was previously backed in the literature. Also a few researches were conducted in Mexico (Brannon et al, 1994; Jiménez 2012) and quality emerged as one of the most important concerns regarding supplier development. Nevertheless there haven't been found investigations implemented in México relating export orientation of the firms and supplier development, it's expected that this research can contribute furthermore to the theoretical framework.

#### d. Experience of the firm

Experience of the firm is another multinational corporation strategy that affects supplier development, this due the fact that when companies decide to go global, they face a complex and unknown setting compared to their local setting in terms of economic cultural and politic dimensions.

It's comprehensible then, that subsidiaries which spent more time in host countries develop stronger linkages with domestic suppliers, this as a result of being longer in the domestic institutional and productive context (Guiliani, 2008). Furthermore, it's possible that many subsidiaries established in a host country, started to operate in periods where protectionist politics forced them to incorporate local inputs. This measure assisted domestic suppliers training, and this behavior could still remain at present, even if currently is a less common practice (Ciravegna & Guiliani, 2007).

In a previous Study (Castellani & Zanfei, 2007), the experience of the firm was defined as the quantity of subsidiaries a multinational corporation had in the same country, this means that with more subsidiaries in a host country, multinational corporations can increase their experience as a result as the subsidiaries being information receptors enabling a faster market knowledge learning. The most accepted definition however is that the experience of the firm is measured according to the operation starting date of the subsidiaries in the host countries and is also called the age of the firm (Scott-Kennel, 2007).

Regarding experience of the firm and its relationship with supplier development, it was demonstrated (Halbach, 1989) that multinational corporations increased their local procurement

trough time, however local inputs levels stood between 10 a 15 percent without government intervention.

Another research was conducted to the 500 companies in the fortune magazine, to determinate which where the factor influencing supplier development. Experience of the firm was one of the variables employed. The results showed, as expected, that there is a positive relationship between the experience of the firm and the increase the percentage of local inputs.

In Scotland, a research (Turok, 1997) showed that the subsidiaries incremented their local input percentage trough time, this due the needing of long time relationships between domestic suppliers and multinational subsidiaries in order to develop technological capacities of the local suppliers. However domestic inputs never surpassed the 12 % of total inputs.

In a case study carried out in Honda (Handfield and Krause, 1999), the amount of domestic suppliers increased from 30 in 1984 to more than 400 in 1997, which suggests that the experience of the firm has an impact on local sourcing and supplier development.

A more recent investigation (Scott-Kennel, 2007), demonstrated the importance of the experience of the firm on the improving of local sourcing, this due the fact that newly established subsidiaries are less embedded in the local context and in need of imported inputs. This was reinforced by the fact that older subsidiaries where more focused on local sourcing.

It is expected that the experience of the firm will contribute the present investigation regarding supplier development in Mexico, this due the fact that there haven't been found previous researches on this topic, and the existence of the so called third generation maquiladoras (Carrillo,). Also experience of the firm is a commonly used variable in the literature and must be taken in to account in the conception of this model.

#### e. Technologic complexity of the firm products

There is not a documented variable as the one presented in this model, but there is no doubt that the technological aspect has been mentioned as one of the factors that deter supplier development.

Perhaps one closer definition is the one proposed by Turok (1997) where the variable technology is conceptualized as the suppliers which are specialists in the production of technology based inputs. Kennel (2007) on the other hand thought that supplier development was hindered when technological gap between multinational subsidiary and their suppliers is extremely large, which result in uncompetitive local suppliers.

However none of those investigations defined product technology complexity, but in a research conducted Mexico (Fuji, 2011) it was proposed that product technology complexity could be classified in five different levels:

- Very Low: Products of alimentary industry, beverages, tobacco, wood and petroleum derivatives.



- Low: Leather products, cloths, Paper industry, chemical industries, nonmetallic mineral based products and basic metal industry products.
- Medium: Textile inputs, plastic industry, furniture industry and metallic products.
- High: Machinery and equipment manufacturing, Transport equipment manufacturing, and other manufacturing industries.
- Very High: Computer manufacturing, communication, measurement equipment, electronic components and accessories, Electric generation manufactures, appliance and electric accessories.

Based on this classification which has not been used in previous literature regarding supplier development, the technology variable is conceptualized as the technology degree of the components that multinational subsidiaries require in their finished products.

Regarding the relationship of technology with supplier development, an investigation (Turok, 1997), showed that multinational subsidiaries high standards hindered domestic suppliers development, whereby the only local inputs integrated in finished products were the technologically simple inputs as paper and wood manufactures.

In Mexico, (Fuji, 2011) it was found that technologically advanced finished exportation products contained significant more imported inputs than those contained in finished products which were technologically low. A PROMEXICO study (2010) revealed that most of the technologically advanced inputs of the fridges are imported.

The importance of the Technological degree of the firm products, resides in the amount of knowledge it can contribute, some researchers think that a reason why technology approach is frequently ignored in the literature proposed models, it's because most of those investigations had analysis units that included subsidiaries of different industries.

#### f. Autonomy of the firm

Researchers suggest that when multinational corporations go Global, they assign specific roles to their affiliates (Giroud & Mizra, 2006). According to literature (Jindra, 2009) there are two roles for multinational corporations, the first one is when a subsidiaries is part of large net where strategies and decisions are being taken by a central office, and the second one where each subsidiary is allowed with a self-determination level. That is defined as autonomy of the firm.

Other definition for autonomy of the firm, is the independence degree a multinational corporation gives to their subsidiaries in terms of inputs sourcing, and its classified in totally or mostly dependent and totally or mostly independent (Alkhatatneh, 2011).

A research in Mexico was conducted where autonomy of the firm was named as centralization sourcing degree. Where the strategies and sourcing decisions of multinational firms depended mostly of central offices (Brannon et al, 1994).

In the literature there are several studies relating autonomy of the firm with supplier development, it is believed that an increase in the autonomy degree could increase local sourcing possibilities (UNCTAD 2001), it is even suggested that companies that form better backward linkages with their suppliers can obtain more autonomy (Zanfei, 2000).

A research conducted in Mexico (Brannon et al, 1994), showed that the lack of autonomy of the multinational subsidiaries in the border affected negatively the local procurement. A survey made to general managers revealed that almost 50 percent of the subsidiaries couldn't establish linkages with domestic suppliers because they weren't allowed by their central offices.

In Asia an investigation revealed that subsidiaries with higher level of autonomy generated more backward linkages with their domestic suppliers (Giroud & Mirza, 2006). Also an investigation in Eastern Europe proposed that companies with more autonomy degree formed more and more intense linkages with their domestic suppliers. The results showed that companies in fact generated more linkages.

Another research in Jordania concluded that autonomy of the firm was a determinant factor regarding transfer technology and the creation of backward linkages with domestic suppliers (Alkhatatnhe, 2011).

There is the possibility that the reasons for this result being positive in mostly of the previous investigations is due the fact that multinational subsidiaries with a high degree of autonomy prefer nearby suppliers in order to monitor them and have more flexibility in technical specifications changes of the components.

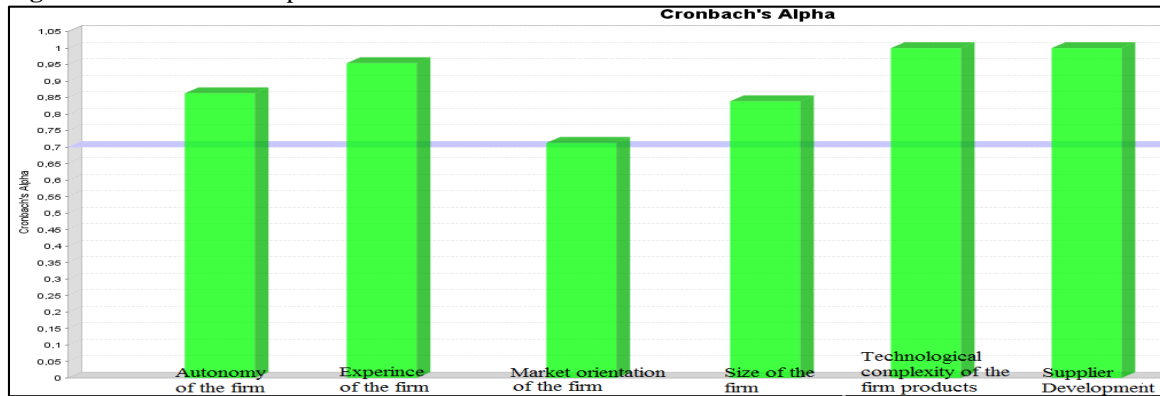
However there is also the possibility that autonomy of the firm gives a negative effect on local supplier development, this due the fact that a higher autonomy grant subsidiaries the opportunity in selecting suppliers from a global net that offer better benefits than local firms in terms of price and quality (Dickens 2003).

Autonomy of the firm it's a variable that gains importance in this investigation due the fact that in a previous research in Mexico (Brannon et al), it has been revealed that many multinational subsidiaries where limited by their lack of autonomy, it is expected that this model will prove if the impact degree of autonomy of the firm regarding supplier development has changed since then.

#### 4. PILOT TEST AND RESULTS

This pilot test was elaborated in order to meet the validity and reliability criteria of the measurement tool. A questionnaire of 47 items was conformed and applied to 10 sourcing managers from 10 multinational subsidiaries in the manufacturing industry. Data were subject to a multiple regression analysis using the statistical package PLS.

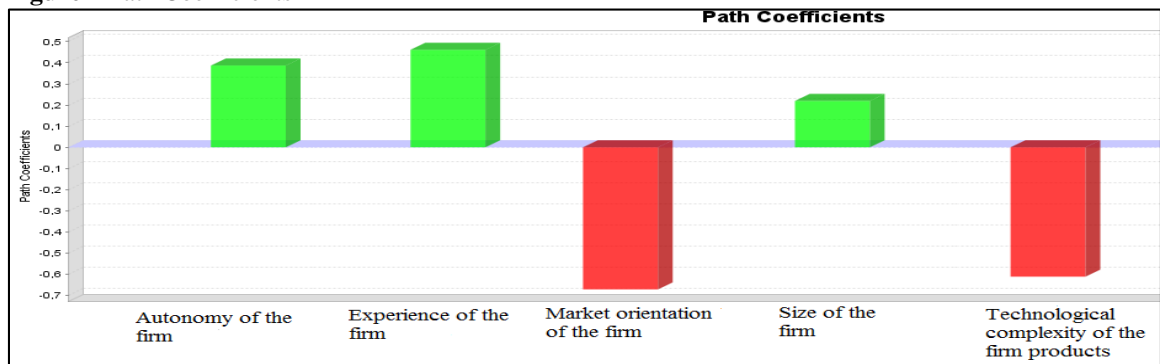
**Figure 1: Chronbach´s Alpha**



Source: Own preparation based on PLS results

The Validity of the constructs was tested with the Chronbach´s Alfa reliability coefficient, the results displayed in the figure 1 confirm that all the constructs are above than 0.70 where market orientation of the firm is the lower in the model.

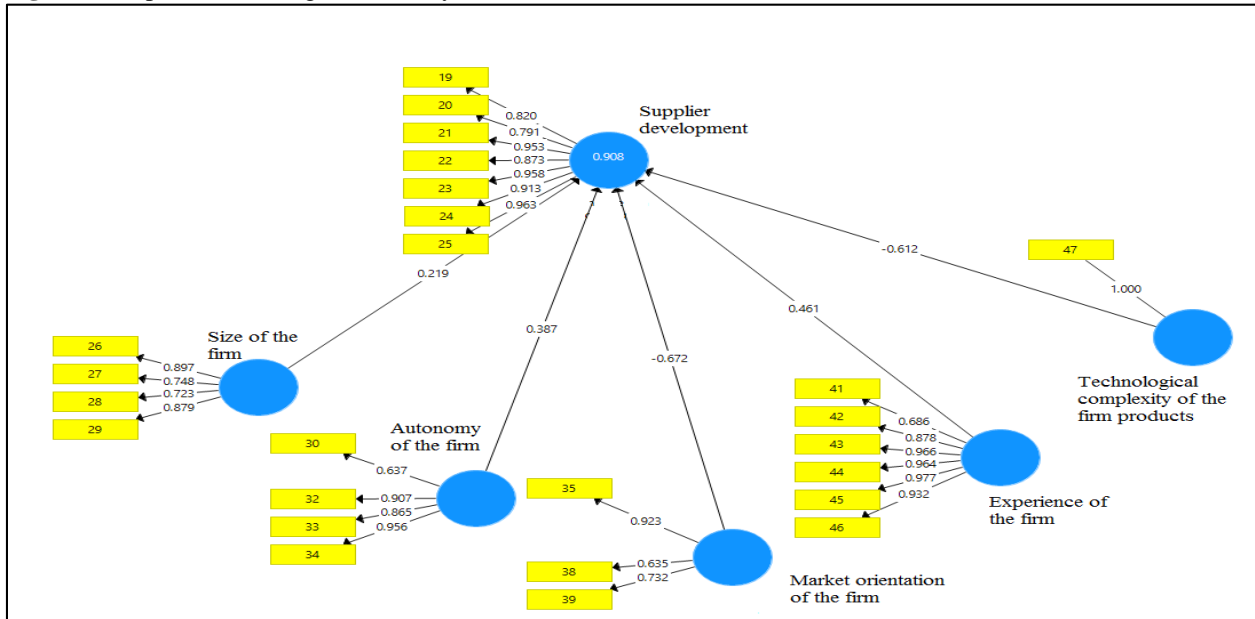
**Figure 2 Path Coefficients**



Source: Own preparation based on PLS results

The path coefficient displayed in figure 2 show that Autonomy of the firm , experience of the firm and size of the firm contribute positively to supply development and market orientation of the firm and Technological complexity of the firm products have a negative relationship regarding supplier development.

**Figure 3** Graphic Model Regression Analysis



Source: Own preparation based on PLS results

The results of the multiple regression analysis displayed in a PLS graphic model in the figure 2 shows that Supplier development variable is explained in a 90% according to the  $R^2$  of .908. The graphic model also contains all the items and the lower coefficient is .0637 which is a modest value, the rest are high or very high values.

### CONCLUSIONS

According to the results in the pilot test, there is a high possibility that the constructs elaborated for this research can predict to a certain extent which are the factor influencing in supplier development. The pilot test results were as it was expected, however technological complexity of the firm products construct can be upgraded, moreover the low levels of chrombach's alpha of market orientation of the firm construct suggest it should be reviewed.

The measurement instrument need more refinement in order to present the questions in more understandable presentation, also interviews with sourcing mangers supplied information that could be integrated in new items.

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# Mexico's Telecommunications Reform: Market Concentration, Prices, Investment and Income Distribution

CRISTINA CASANUEVA-REGUART<sup>1</sup>  
*Universidad Iberoamericana  
Ciudad de México, México*

LUIS FERNANDO CANTÚ-DÍAZ DE LEÓN  
*Universidad Iberoamericana  
Ciudad de México, México*

*This paper follows up from the previous analysis of México's Telecommunication and Broadcasting Reform (Casanueva-Reguart & Bacilio-Avila, 2015). It presents the institutional and regulatory progress made by the telecom Reform designed to foster competition in the telecommunications and broadcasting service markets, describing progress that has taken place in the implementation of these measures (2014-2015) and the market's response over the course of 2015, in terms of the following variables:*

- *Market concentration measured by the quarterly estimation of the Herfindahl-Hirschman Index (HHI).*
- *Prices to end-users as a possible result of an increase in telecom services markets competition.*
- *Investment. We determine whether there are any changes in investment flows on the part of existing operators and newcomers to the market as a result of the new regulation.*

*An analysis of the distributive effects of the Reform is also performed: we analyze the distribution of telecommunications services as a function of different levels of household income (Engel Curves). We compare the results of this analysis between 2012 and 2014<sup>2</sup>.*

*In the conclusion, the paper discusses scenarios for the future of the Reform and its sustainability.*

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<sup>1</sup> Address correspondence to Cristina Casanueva-Reguart, Universidad Iberoamericana, Ciudad de México, México. E-mail: [ccasanueva@stanfordalumni.org](mailto:ccasanueva@stanfordalumni.org)

<sup>2</sup> This analysis is based on the Household Income and Expenditure Survey. The survey is conducted every two years in Mexico; the 2014 information is the latest available, since the 2016 has not been released.

# Motivación laboral

LIDIA MARCHAN RAMIREZ<sup>1</sup>  
Universidad Tecnológica de Nuevo Laredo  
Nuevo Laredo, Tamaulipas, México

*El impulso de realizar cualquier actividad se conoce como una fuerza que nos mueve a una acción, conforme el desarrollo de una persona cuando se enfrenta a situaciones que le permiten tomar decisiones, como consecuencia de resultados positivos se motiva con el éxito y satisfacciones, en caso contrario si la toma de decisiones no da los resultados esperados provoca en el ser humano decepción y una constante búsqueda de motivadores. En el contexto laboral la motivación depende en gran porcentaje de la organización en donde el individuo se desempeña. La productividad en las empresas siempre es mayormente eficiente cuando brinda estímulos y la satisfacción necesaria a sus colaboradores vinculando la oportunidad para el desarrollo de ambos.*

## Motivation and Job Satisfaction

*The impulse to realize any activity is known as a force that moves us into an action, according to the development of a person when he or she encounters a situation that permits them to take a decision. Due to positive results, he or she is motivated by the success and satisfactions, but on the contrary if the decision making does not give the expected results, it causes disappointment and a constant search for motivators by the human being. In the employment context, motivation depends a strong percentage on the organization in which the individual serves. The productivity in businesses is always more efficient when it provides the stimuli and the necessary satisfaction to its collaborators, linking the opportunity for both of their developments.*

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<sup>1</sup> Address correspondence to Lidia Marchan Ramirez, Universidad Tecnológica de Nuevo Laredo, Nuevo Laredo, Tamaulipas, México. E-mail: [lmarchan@utnuevolaredo.edu.mx](mailto:lmarchan@utnuevolaredo.edu.mx)

# **Estudio de caso: medición de habilidades humanas y clima organizacional para identificar y desarrollar acciones de productividad incremental**

FRANCISCO LÓPEZ VÁZQUEZ<sup>1</sup>

*LR Mercadotecnia Consultoría de Negocios S de RL MI  
Reynosa, Tamaulipas, México*

MIGUEL A. SAHAGUN GUARDIOLA

*Earl N. Philips School of Business, High Point University  
High Point, North Carolina, USA*

*Este trabajo tiene como propósito medir el grado de productividad de un grupo e identificar los factores de liderazgo, 1) reconocimiento, 2) autonomía, 3) cohesión de grupo, 4) comunicación, 5) presión y 6) soporte, para crear un marco de referencia que ayude a comprender la influencia que tienen en la productividad empresarial. Un problema recurrente en las organizaciones es garantizar la productividad incremental a partir del desempeño del factor humano, por lo tanto la contribución de este estudio es la identificación de los factores principales que influyen en la productividad laboral. El estudio arroja como resultado que solamente cuatro de los seis factores de liderazgo tienen un impacto significativo en el grado de productividad de un grupo.*

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<sup>1</sup> Address correspondence to Francisco López Vázquez, Professor of Marketing, LR Mercadotecnia Consultoría de Negocios S de RL MI, Sierra del Fraile #572 Col. Fuentes Coloniales C.P. 88703, Reynosa, Tamaulipas, México.  
E-mail: [consulta.mercadotecnia@gmail.com](mailto:consulta.mercadotecnia@gmail.com)

## 1. INTRODUCCIÓN

Las empresas nacionales de hoy operan cada vez más en condiciones de rivalidad empresarial determinada por la influencia directa de otras organizaciones globales y por condiciones de mercado de economías globales. Estas condiciones necesariamente deben ser estudiadas desde el análisis de la competitividad, su comprensión y funcionamiento. Sin embargo es importante identificar un elemento de desarrollo particular de las empresas en el plano de la competitividad, un elemento que es manejado y considerado como indicador de medición: que es la capacidad de producir más bienes y satisfactores con menos recursos, a esta relación se le denomina comúnmente productividad.

En este estudio se presenta un análisis de caso para encontrar la influencia que tienen los principales factores del liderazgo en la productividad empresarial, así como reconocer su conformación en las personas. Pretendiendo así comprender su influencia y contribución en la competitividad de la empresa seleccionada perteneciente a la industria maquiladora en la ciudad de Reynosa Tamaulipas. La contribución de este estudio permitirá tener una visión inicial sobre los principales factores que influyen en la productividad laboral que la empresa deberá observar, modificar e incluir en su modelo de productividad empresarial. De esta manera será más fácil resolver los principales problemas a los que se enfrentan tanto la empresa como los formadores y administradores del recurso humano dentro de la misma.

De manera adicional, este estudio de caso es presentado como pieza detonadora para explicar el fenómeno de productividad incremental a partir de la identificación de las relaciones con sus factores principales. Se espera que este resultado sirva para posteriormente establecer un diseño experimental de mayor alcance.

## 2. ESTADO DE LA CUESTIÓN

### 2.1 Antecedentes

Las consideraciones teóricas de la competitividad empresarial han sido revisadas desde diversos enfoques, uno de ellos siendo de los más actuales es derivado de la globalización. De igual manera, se encuentran diversos enfoques sobre la productividad, siendo uno de ellos explicado por medio de las teorías y modelos de la competitividad sistémica que explican los cambios estructurales de las organizaciones. A su vez, otros estudios han encontrado que la productividad y competitividad están relacionadas directamente con la innovación y su grado de implantación en las organizaciones.

### 2.2 Competitividad

En este estudio de caso se utiliza la competitividad como contexto, en el cual las empresas buscan incrementar sus niveles de productividad. La competitividad puede resultar un tema de observarse complejo ya que podría abordarse en diversos niveles de análisis. Siendo uno de estos niveles el relacionado con influencia económica de países o regiones, otro relacionado con las características

estructurales de la industria y otro más específico relacionado con la rentabilidad y productividad de empresas de un mismo sector. Este último nivel de análisis, productividad de empresas de un mismo sector, es el motivo de interés de este estudio.

En este sentido manifiesta Sastre Miguel Ángel (2000) que para profundizar su análisis de la competitividad se deben considerar dos aspectos básicos: su forma de medición y sus factores condicionantes. Su análisis demuestra que los incentivos para la competitividad son desiguales y se manifiestan en diferentes condiciones de desarrollo de las empresas vía costes, productividad o capacidad de diferenciación e innovación. Apareciendo el factor humano como determinante para que la empresa puede mejorar su posición competitiva.

Estudios demuestran que la competitividad empresarial está relacionada tanto con variables macroeconómicas del mercado como con el resultado de su posición competitiva. Michael Porter (1999) establece el modelo de ventaja competitiva y estrategia de mercado basado en cinco fuerzas competitivas (amenaza de entrada de nuevos competidores, amenaza de entrada de posibles productos sustitutos, poder de negociación de los proveedores, poder de negociación de los clientes y rivalidad entre competidores existentes). De tal manera que la empresa debe establecer tanto su dirección estratégica como su cambio estratégico en base al análisis estructural del mercado y la industria a la que pertenece, para definir una posición de rivalidad y definir su competitividad. Sin embargo cabe señalar que este modelo de competitividad depende directamente la productividad particular de cada organización.

Otros estudios de competitividad están sustentados en teorías clásicas y neoclásicas de la competitividad, en este caso Labarca Nelson (2007) establece que: el estudio de las diferentes corrientes teóricas de la competitividad empresarial ha permitido construir un camino para comprender mejor sus elementos y proponer posibles soluciones. Su análisis va desde Adam Smith, David Ricardo, Thomas Robert Malthus, que afirmaban que la riqueza estaba sustentada en la economía y la maximización de las reservas de oro y plata, así como el reconocimiento de la acumulación, transferencia y la adaptación de destrezas tecnológicas, o a través del reconocimiento de las ventajas comparativas identificando las fuerzas del mercado y su asignación de recursos de una nación a aquellos sectores donde sea relativamente más productiva. Hasta Michael Porter en sus tratados de competitividad y ventaja competitiva en el mercado y Shelby D. Hunt (2010) en su teoría de competitividad sobre la ventaja del uso de los recursos. Teniendo como resultado del análisis que en la medida que aumenta la complejidad de las nuevas formas organización industrial, los principios teóricos requieren de mayor valor estratégico para formular planes de desarrollo empresarial.

Debido a que la productividad está estrechamente relacionada con la competitividad empresarial, este estudio pretende explicar las relaciones entre los principales factores que impactan en la productividad.

### 2.3 Productividad

Es común encontrar el significado de productividad relacionado a la capacidad de producir algún producto o servicio de forma eficiente, la real academia española (2006) la define como la relación

entre lo producido y los medios empleados, tales como mano de obra, materiales y energía, etc. Ligando esta definición con lo discutido en el apartado sobre competitividad se puede considerar que la productividad es un componente esencial de la competitividad. De manera adicional el tema de la productividad atrae la atención para el estudio y comprensión por la creciente exigencia en el intercambio de bienes y productos manufacturados, que garanticen el cumplimiento de los estándares de calidad y eficiencia necesarios para su producción, entendido también como la demostración productividad incremental o mejora continua.

Para Mejía Armando (2006) la productividad tiene que ver con el talento humano plantea como se enlazan los procesos de innovación y formación de manera efectiva para incrementar la competitividad, esto significa que lo más importante y estratégico para el desarrollo de una empresa eficiente, sostenible es utilizar el capital intelectual como factor de generación de conocimiento productivo, llegando a la conclusión que la conducción de una gestión integral del talento humano con un enfoque en competencias bien orientado en las organizaciones de toda índole, administrar, evaluar y determinar el esfuerzo formativo, permitirá alinear el aporte del talento humano con las necesidades estratégicas de la organización.

Desde este punto de vista es importante encontrar sentido a definir los elementos formativos de la productividad. En este estudio se definen los elementos autonomía, cohesión de grupo, comunicación, presión y soporte, como factores de la productividad para crear un marco de referencia que explique el enfoque de competencias intrínsecas de la persona y el grado o nivel de influencia.

## 2.4 Productividad Incremental

La productividad se puede observar desde el punto de vista de eficiencia y efectividad en la producción reconocida como calidad. La gestión de la calidad se ha ido formando por aportaciones de importantes investigaciones. Deming (1986) plantea que la eficiencia de una organización consiste fundamentalmente en analizar cómo mejorar la calidad y su mejora continua mediante la implantación del ciclo de planear, hacer, verificar y actuar, que inciden en la realización del producto o servicio. Por otra parte Juran (1951) estableció el principio de Pareto que sostiene que un pequeño porcentaje de factores de cualquier situación da lugar a un gran porcentaje del efecto, argumentando que una estructura organizacional de apoyo y compromiso de la dirección son esenciales para el logro de la calidad. Desde esta perspectiva en este estudio de caso es muy importante definir los elementos de influencia de eficiencia y efectividad de la persona para mejorar de forma continua para lograr la productividad.

Rositas Juan (1999) establece en un modelo conceptual sobre los factores críticos para el éxito en la gestión de la calidad: la planeación estratégica, el liderazgo directivo y la participación del recurso humano. La participación del recurso humano es determinante y se corroboró en el caso de la industria manufacturera mexicana, en el sentido de que el liderazgo de la alta gerencia impacta a la generación de la calidad del producto y esto a su vez impacta la satisfacción del cliente. El liderazgo de la alta gerencia hacia la calidad de producto se transmite a través de una alta participación así como mediante la capacitación, entrenamiento y desarrollo del recurso humano.

En este sentido en el estudio de caso que se presenta se busca explicar la interrelación entre la productividad y los factores propuestos de liderazgo (reconocimiento, autonomía, cohesión de grupo, comunicación, presión y soporte) para que las organizaciones pudieran establecer un mecanismo de control y desarrollo del recurso humano que les permita incrementar su productividad y ser más competitivas en el mercado global al que pertenecen.

## 2.5 Productividad por competencias laborales

Considerar la productividad laboral para explicar la importancia del desempeño del factor humano es factible para identificar con mayor precisión los elementos que conforman la productividad que influye directamente en el contexto de la competitividad empresarial.

Mediante la concepción de las competencias se ofrecen un nuevo significado al acto de aprender y hacer para la productividad. A partir de dicha concepción y utilizando la definición de competencia provista por Argundin (2005) en la que se establece que una competencia es “un conjunto de comportamientos sociales, afectivos y habilidades cognoscitivas, psicológicas sensoriales y motoras que permiten llevar a cabo adecuadamente, un papel un desempeño, una actividad, una tarea”. A su vez, mediante esta perspectiva, la modernidad y la industrialización actual advierten la necesidad de construir teorías científicas y tecnológicas que expliquen el papel e impacto del factor humano en la productividad empresarial. En este contexto será necesario observar, comprender y analizar la integración de diversos elementos en diversos escenarios.

La literatura indica que diversos autores se han interesado en describir el nuevo modelo económico basado en el conocimiento, descrito como un generador de riquezas en las economías y parte esencial de la competitividad derivado de la productividad empresarial. Moreno Jesús (2007) establece que el conocimiento reside, sobre todo, en las personas así como la capacidad para crearlo por lo cual es necesario considerar el capital humano de una organización como un recurso estratégico clave capaz de proporcionar a la empresa una ventaja competitiva sostenible. Por otra parte resalta la importancia de estudiar el cambio en la concepción del personal como un coste para pasar a concebirse como un recurso. También asevera que el capital humano juega un papel esencial en la consecución de los objetivos de la organización y donde la gestión por competencias está posicionándose como un modelo de gestión esencial para alinear los objetivos de los recursos humanos con los objetivos de la organización. De esta manera se puede inferir que la relación conocimiento-competencia genera un resultado positivo en la productividad empresarial y está a su vez incrementaría el nivel de competitividad empresarial.

Moreno Briseño (2012) hace una reflexión del talento humano como capital intangible, considera su relevancia en diferenciar los recursos y talentos para otorgar valor a las organizaciones, mediante un talento caracterizado por los conocimientos, experiencia, individualidad y diversidad de competencias que en su conjunto contribuyen al alcance y metas de productividad. Por lo tanto se puede inferir que la capacidad del individuo depende de un conjunto de elementos que al interactuar en metas definidas y resultado de sus competencias logaran los objetivos. Sin embargo aún queda al descubierto esclarecer los factores que están fuera de los conocimientos para definir la productividad incremental o mejora continua del individuo fuera de las metas establecidas por la organización.

González Erika (2010) realiza un análisis conceptual de la relación entre los modelos de competencias directivas de liderazgo de Cardona Wilkinson (2009), desatacando la división de liderazgo en cuatro categorías: de negocio, interpersonales, personales externas y personales internas. Encuentra una relación importante entre variables para desarrollar la competencia directiva y destaca la importancia de cambiar de una organización jerárquica o por objetivos a una por competencias. Sin embargo las relaciones primarias encontradas sugieren que deben ser probadas empíricamente así como profundizar en la medición de las competencias. Este trabajo de investigación presenta mediante el estudio de caso el análisis de los factores que integran el liderazgo: reconocimiento, autonomía, cohesión de grupo, comunicación, presión y soporte, como el conjunto de destrezas laborales que en su integración en la persona permiten ampliar la habilidad personal para contender con los cambios.

### 2.5.1 Reconocimiento

El reconocimiento explica la distinción de la persona respecto a las demás en el grado de rasgos y características, medir este elemento respecto al constructo de productividad permite identificar la expectativa del empleado respecto a la distinción de su esfuerzo y aportación al trabajo. Por lo tanto se establece la siguiente hipótesis:

*H1:* Existe una relación directa y significativa entre el reconocimiento al trabajo ejercido por la empresa y el nivel de productividad del empleado.

### 2.5.2 Autonomía

La autonomía explica el grado de independencia del empleado para controlar y organizar su propio trabajo, medir este elemento respecto al constructo de productividad permite identificar la implicación para tomar decisiones. Por lo tanto se establece la siguiente hipótesis:

*H2:* Existe una relación directa y significativa entre el nivel de autonomía y el nivel de productividad del empleado.

### 2.5.3 Cohesión de grupo

La cohesión de grupo explica el patrón de estructura del grupo y la influencia del empleado para generar solidaridad en su propio trabajo, medir este elemento respecto al constructo de productividad permite identificar el sentido de comunidad. Por lo tanto se establece la siguiente hipótesis:

*H3:* Existe una relación directa y significativa entre el grado de cohesión de grupo y el nivel de productividad del empleado.



#### 2.5.4 Comunicación

La comunicación explica el grado de interés personal del empleado para hacer fluir la comunicación, medir este elemento respecto al constructo de productividad permite identificar la efectividad de la comunicación. Por lo tanto se establece la siguiente hipótesis:

*H4:* Existe una relación directa y significativa entre la efectividad en la comunicación y el nivel de productividad del empleado.

#### 2.5.5 Presión

La presión explica aquellas situaciones en la que el empleado percibe un comportamiento caracterizado por hostigamiento, medir este elemento respecto al constructo de productividad permite identificar el esfuerzo emocional o intelectual para realizar su trabajo. Por lo tanto se establece la siguiente hipótesis:

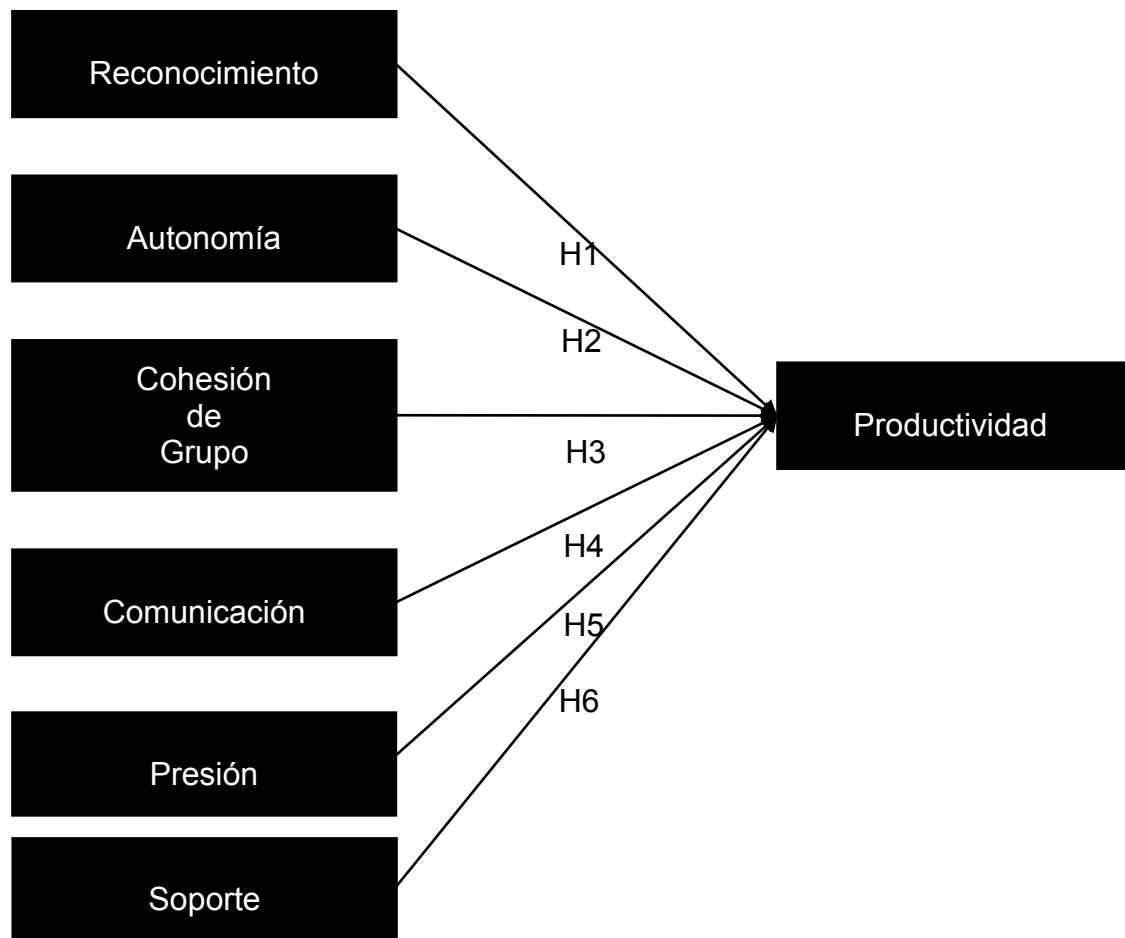
*H5:* Existe una relación directa y significativa entre el nivel de presión percibido por parte del empleado y su nivel de productividad.

#### 2.5.6 Soporte

El soporte elemento explica el grado de interés que la organización demuestra por el empleado, medir este elemento respecto al constructo de productividad permite identificar el la adaptación óptima entre el puesto de trabajo y el empleado para realizar su trabajo. Por lo tanto se establece la siguiente hipótesis:

*H6:* Existe una relación directa y significativa entre el soporte otorgado al empleado por parte de la empresa y el nivel de productividad del empleado.

La Figura 1 muestra el modelo completo indicando las hipótesis anteriormente descritas.



**Figura 1:** Modelo Propuesto

### 3. METODOLOGÍA DE INVESTIGACIÓN

#### 3.1 Diseño de la investigación: Estudio de caso de una sola medición

Pre-experimento para encontrar la relación causal entre las variables observadas para explicar los factores de liderazgo (reconocimiento, autonomía, cohesión de grupo, comunicación, presión y soporte) y su relación con la variable productividad.

#### 3.2 Metodología

En el presente estudio se aplicó una encuesta para conocer la opinión de las habilidades humanas y clima organizacional, en un grupo seleccionado de 66 supervisores de producción.

Instrumento de medición: Encuesta con 50 reactivos (anexo 1). La encuesta fue diseñada con diferentes secciones para integrar diferentes cuestionamientos que pudieran facilitar su identificación y origen para su análisis: sección 1) Productividad (10 reactivos), 2) Reconocimiento (5 reactivos), 3) Autonomía (6 reactivos), Cohesión de grupo (11 reactivos), Comunicación (11 reactivos), Presión (3 reactivos), Soporte (4 reactivos). Todos los reactivos fueron medidos mediante una escala de Likert de 5 puntos. Utilizando el número 1 como el menor valor posible y el número 5 como el mayor valor posible.

### 3.3 Muestra y Método de Muestreo

El instrumento de medición se aplicó a 66 supervisores de producción pertenecientes a una empresa del giro (maquiladoras) del sector automotriz. El método de muestreo utilizado en la selección de los participantes fue no aleatorio ya que la elección de los participantes fue del 85% del personal de tres turnos de producción de línea. El personal se les informó y se brindó inducción para su aplicación que consistió en solicitar respuesta objetiva a cada una de las preguntas y que su resultado permitiría el análisis correspondiente para determinar el grado o nivel en el que se encuentra el grupo de trabajo.

## 4. ANÁLISIS DE RESULTADOS

La Tabla 1 muestra el contraste de la regresión utilizada para corroborar las hipótesis del estudio. Los resultados obtenidos,  $F = 20.939$  (sig. .000), indican que la variable regresora sí influye y sí existe una relación lineal entre las variables. En otras palabras, sí existe una dependencia lineal de la variable productividad (variable dependiente) respecto a las variables reconocimiento, autonomía, cohesión de grupo, presión y soporte (variables independientes). La explicación de la variación en la variable dependiente (productividad) debido a las variables independientes (reconocimiento, autonomía, cohesión de grupo, comunicación, presión y soporte) es del 68% ( $R^2 = .680$ ) ver Tabla 2.

Al analizar el impacto de cada una de las variables independientes en la variable dependiente se encontró que solamente dos variables, autonomía y cohesión de grupo mostraban un impacto significativo (.01) en la variable dependiente productividad (ver el Modelo<sup>a</sup> en la Tabla 2). Debido a los resultados obtenidos se decidió correr nuevamente el análisis de regresión eliminando dos variables (presión y soporte) de las cuatro que no presentaron tener un impacto significativo. Esta decisión fue en base a que las otras dos variables (reconocimiento y comunicación) que no presentaban impacto significativo lo presentaban marginalmente significativo. Al analizar los resultados de este segundo análisis de regresión, se encontró que las cuatro variables independientes 1) reconocimiento, 2) autonomía, 3) cohesión de grupo y 4) comunicación impactaban significativamente en la productividad del empleado (variable dependiente).

Con sustento en los resultados anteriormente mencionados se encuentra soporte solamente para las primeras cuatro hipótesis de investigación (H1, H2, H3 y H4). H1 y H4 significativas al .10 mientras que H2 y H3 significativas al .01. Las hipótesis de investigación (H5 y H6) no se

corroboran con los resultados obtenidos en este estudio. Ver el Modelo<sup>b</sup> de la Tabla 2 para mayor detalle. Por último es importante indicar que no se pierde explicación en la variable productividad al eliminar las variables no significativas (presión y soporte), ya que la R2 del Modelo<sup>b</sup> es igual a la obtenida en el Modelo<sup>a</sup> (.680), ver Tabla 2.

**Tabla 1** ANOVA El contraste de Regresión

Fuente de Variación	Sumas Cuadráticas	gl	Medias Cuadráticas	Estadístico de Contraste F	Sig.
Regresión	880.180	6	146.697	20.939	.000
Residual	413.350	59	7.006		
Total	1293.530	65			

**Tabla 2** Resultados de Regresión: Productividad y Factores de Liderazgo (N = 66)

Variable Dependiente: Productividad	Modelo <sup>a</sup>		Modelo <sup>b</sup>	
	B	t-value	B	t-value
Constante	5.724	1.436	5.894	1.592
Reconocimiento	.197	1.486	.165*	1.724
Autonomía	.767***	4.332	.758***	4.384
Cohesión de Grupo	.178***	2.631	.178***	2.674
Comunicación	.134	1.586	.135*	1.648
Presión	.026	.205		
Soporte	-.055	-.352		
<b>R<sup>2</sup></b>	<b>.680</b>		<b>.680</b>	

<sup>a</sup> Modelo inicial con todas las variables independientes

<sup>b</sup> Modelo con variables independientes significativas solamente

\*p<.10, \*\*p<.05, \*\*\*p<.01 (prueba de hipótesis)

## 5. CONCLUSIONES

En este estudio de caso se encontró que en efecto los factores de liderazgo (reconocimiento, autonomía, cohesión de grupo, y comunicación) tienen un impacto positivo en la productividad de un grupo. De manera adicional para comprender mejor este fenómeno de formación de productividad incremental es necesario estudiarlo dentro del contexto de la competitividad ya que es necesario considerar tanto el tipo de medición que se realiza como sus condicionantes (Sastre 2000). Siendo los factores condicionantes más importantes: 1) los factores críticos de éxito en la productividad están influenciados por los factores de liderazgo y la participación del recurso humano y que los comportamientos sociales, afectivos, cognoscitivos, permiten llevar de una mejor manera el desempeño (Rositas 1999 y Agudín 2005), 2) la competitividad está relacionada con el resultado de su posición competitiva (Porter 1990), 3) la ventaja competitiva de una organización está fundamentada en el uso de sus recursos (Hunt 2010), 4) el incremento en la productividad de una empresa está íntimamente relacionada con el talento humano que la compone (Mejía 2006) y 5) la productividad se puede estudiar desde el punto de vista de eficiencia y efectividad (Deming 1994).

Este estudio de caso corrobora de manera empírica la identificación de una medida y la relación de los factores de liderazgo que influyen significativamente en la productividad de un grupo. Por

lo tanto una organización enfocada en aumentar su productividad a partir del desarrollo de estos factores de liderazgo de manera incremental en su recurso humano, puede establecer un mecanismo de control enfocándose en el reconocimiento, la autonomía, la cohesión de grupo y la comunicación y así lograr la productividad deseada. Es también importante recalcar que, dentro del contexto de competitividad establecido, la productividad de un grupo favorece el cumplimiento de las metas establecidas por la organización.

## 6. LIMITACIONES Y FUTURAS INVESTIGACIONES

Los resultados presentados deben ser interpretados solamente bajo el contexto presentado. De igual manera estos resultados son válidos únicamente para la empresa utilizada como caso de investigación. Sin embargo la generalización de los resultados encontrados podría extenderse a empresas del mismo giro que enfrenten condiciones muy similares tanto internas como externas a las que enfrenta la empresa participante.

Para conseguir resultados más sólidos y con una mayor generalización es necesario replicar el estudio en otras empresas y ver si se sustentan los resultados encontrados. Se recomienda que las empresas seleccionadas pertenezcan a diferentes giros y presenten diferentes condiciones tanto internas como externas. De esta manera se alcanzaría una mayor comprensión del desempeño del recurso humano y se contribuiría al establecimiento de métodos y procedimientos tanto teóricos como prácticos para generar de manera eficiente y efectiva productividad incremental en las organizaciones.

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## ANEXO 1

### Reactivos Utilizados en la Medición de los Constructos Estudiados

#### PRODUCTIVIDAD

1. Me siento muy satisfecho con mi ambiente de trabajo.
2. En mi empresa está claramente definida la Misión y Visión.
3. Existe un plan para lograr los objetivos de mi empresa.
4. Si hay un nuevo plan estratégico, estoy dispuesto a servir de voluntario para iniciar los cambios.
5. Me gusta mi trabajo.
6. Al terminar mi día de trabajo, me siento satisfecho de lo que he realizado.
7. Considero que nuestros clientes externos están recibiendo el servicio que demandan de nosotros.
8. Considero que nuestros clientes internos están recibiendo el servicio que demandan de nosotros.
9. En mi empresa valoran lo que hago.
10. Me siento orgulloso de trabajar en esta empresa.

#### RECONOCIMIENTO

11. Mi jefe conoce mis puntos fuertes y me los hace notar.
12. Mi jefe me utiliza como ejemplo de lo que se debe hacer.
13. Mi jefe me hace saber que valora mis esfuerzos y aportaciones en mi trabajo, aun cuando por causas ajenas, no se alcance el objetivo deseado.
14. Puedo contar con una felicitación cuando realizo bien mi trabajo
15. Puedo recomendar esta empresa para trabajar a un amigo o colega.

#### AUTONOMÍA

16. Mi jefe me motiva a cumplir con mi trabajo, de la manera que yo considere mejor.
17. Soy responsable del trabajo que realizo.
18. Soy responsable de cumplir los estándares de desempeño y/o rendimiento.
19. Conozco las exigencias de mi trabajo.
20. Me siento comprometido para alcanzar las metas establecidas.
21. El Horario de trabajo me permite atender necesidades personales.

#### COHESIÓN DE EQUIPO

22. Considero ser muy honesto con los miembros de mi equipo.
23. Considero que mi equipo tiene muy claro una meta en común.
24. Mi equipo trabaja de manera eficiente y enfocada.
25. Mi equipo lleva a cabo las juntas de trabajo de manera eficiente.
26. Puedo confiar en los miembros de mi equipo.
27. Considero que los miembros de mi equipo se comunican muy bien entre si.
28. Considero que los miembros de mi equipo son mis amigos.

- 29. Mi equipo siempre cumple con los plazos establecidos.
- 30. Considero que los miembros de mi equipo se tratan educadamente entre si.
- 31. Considero que los miembros de mi equipo rápidamente se adaptan a cambios de prioridades.
- 32. Considero que los miembros de mi equipo rápidamente responden sobre mis decisiones.

#### COMUNICACIÓN

- 33. Considero que yo si se escuchar, estoy siempre atento y en actitud receptiva
- 34. Considero que cuando hablo, lo hago oportunamente y me expreso en forma correcta.
- 35. Considero que cuando participo en una conversación siempre trato de ser amable
- 36. Comprendo la importancia que tiene el dominio de mí mismo y siempre lo práctico.
- 37. Considero que las técnicas de comunicación interpersonal son la clave de mi éxito.
- 38. Considero que interactué bien con mis compañeros porque entiendo todos los elementos implicados en la conversación.
- 39. Considero siempre cuidar de lo que digo, confío poco en los demás.
- 40. Considero ser capaz de guardar un secreto.
- 41. Considero que comporto bien en la mayoría de las conversaciones.
- 42. Considero que no reacciono emocionalmente cuando me siento atrapado o me provocan.
- 43. Considero que soy muy eficaz cuando se trata de persuadir a las personas de que comprendan mi punto de vista o que hagan lo que yo deseo.

#### PRESIÓN

- 44. Considero que tengo mucho trabajo y me falta tiempo para realizarlo
- 45. Considero que para desempeñar las funciones de mi puesto, tengo que realizar un esfuerzo adicional y retador en el trabajo.
- 46. Considero que algunos compañeros en mi nivel, podrían sentir estrés, debido a la exigencia de trabajo.

#### SOPORTE

- 47. Puedo contar con la ayuda de mi jefe cuando la necesite.
- 48. A mi jefe le interesa que me desarrolle profesionalmente.
- 49. Mi jefe me respalda al 100%
- 50. Es fácil hablar con mi jefe sobre problemas relacionados con el trabajo.



# **Aplicación de la reingeniería para la mejora de calidad: caso en una empresa de serigrafía, en el estado de Tlaxcala, E.U.M.**

DRA. SOFÍA MITRE CAMACHO<sup>1</sup>  
*Universidad Autónoma de Tlaxcala  
Tlaxcala, Tlaxcala, México*

DRA. GLORIA RAMÍREZ ELÍAS, M.A.  
*Universidad Autónoma de Tlaxcala  
Tlaxcala, Tlaxcala, México*

HÉCTOR VÁZQUEZ GALICIA, M.A.  
*Universidad Autónoma de Tlaxcala  
Tlaxcala, Tlaxcala, México*

DOROTEO NAVA  
*Universidad Autónoma de Tlaxcala  
Tlaxcala, Tlaxcala, México*

SILVIA PATRICIA MUÑOZ CASTELLANOS, M.B.A.  
*Universidad Autónoma de Tamaulipas-Campus Nuevo Laredo  
Nuevo Laredo, Tamaulipas, México*

*La presente investigación se aboca a generar conocimiento y aprendizaje aplicativo de acuerdo a la unidad de aprendizaje otros sistemas de costos dentro del contenido se dirige al tema la reingeniería, de alto impacto para las empresas y para todos aquellos que se ven escudriñado, analizando los procesos de una empresa, de tal manera que, cuando está ha decidido implementarla en un proyecto genera ganancias, elimina tiempos ociosos, procesos inútiles, Para ello debe realizarse un análisis con todo el derroche de información que se obtiene gracias a las herramientas tales como: el diagrama de Pareto, diagrama de afinidades, el benchmarking, matriz de actividades, entre otras, aplicadas a este reproceso. Durante este paso, aparte de una reestructuración fundamental en la empresa de serigrafía reconsidera un grupo de tareas que se han vuelto irrelevantes y crean un nuevo y más productivo proceso que funcione mejor a las necesidades de los clientes, brindando productos de buena calidad. La investigación es mixta porque se cuenta con datos numéricos, comparación de resultados, instrumentos predeterminados, así como la descripción, análisis y desarrollo de temas, es documental y de campo porque se manejan distintos tipos de herramientas para el estudio y comprensión de cada debilidad dentro de la empresa.*

**PALABRAS CLAVE**      *Reingeniería, procesos, calidad, competitividad.*

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<sup>1</sup> Address correspondence to Dra. Sofia Mitre Camacho, Universidad Autónoma de Tlaxcala, La Loma Xicohtencatl, 90070 Tlaxcala de Xicohténcatl, Tlaxcala, Mexico. E-mail: [sofiam61@hotmail.com](mailto:sofiam61@hotmail.com)

*This research is devoted to create knowledge and applicative learning according to the learning unit that other cost systems. Within it, the content addresses the issue of reengineering, high impact for companies and for all those who are scrutinized by the analyzation process of a company. So when that it has been decided to implement a project generates profits and eliminates idle time and unnecessary processes. Analysis should be done with tools such as: the Pareto chart, diagram of affinities, benchmarking, and matrix of activities among others must applied to said process. During this step, other than the fundamental restructuring in the screen printing company, one must reconsider various tasks that have become irrelevant and create new and more productive ones that work better for the customers' needs, therefore providing good quality products. Research is mixed because it relies on numerical data, comparison of results, default instruments and analysis and development issues, which is documentary and field because of different types of tools for this study and the understanding of each weakness within of the company.*

**KEYWORDS** *Reengineering, process, quality, competitive.*

## INTRODUCCIÓN

La reingeniería es el diseño rápido y radical de los procesos estratégicos de valor agregado y de los sistemas, políticas y las estructuras organizacionales

Los intentos de dinamizar las operaciones de negocios y mejorar su eficiencia, han sido comunes desde hace mucho tiempo. Los expertos en eficiencia que hicieron estudios de tiempo y movimiento durante la primera mitad del siglo XX en ocasiones fueron objetos de burlas, ello no impidió que con frecuencia produjeran resultados eficaces, y que su trabajo condujera al estudio y a la práctica formal de la ingeniería industrial. En movimiento para apoyar el computador en la década de 1960, trato también de mejorar la productividad y eficiencia. Se creyó que ambas reducirían los costos y conducirían al mejoramiento del servicio al consumidor.

En México pocas instituciones aplican este sistema, así mismo es importante resaltar que para el siglo XXI las organizaciones se integran a una visión globalizadora e interactuante en búsqueda de la excelencia.

La reingeniería hoy en día es uno de los nuevos conceptos metodológicos de los negocios del cual se habla mucho en las instituciones públicas o privadas, y que ha dado origen a establecer un nuevo paradigma administrativo.

Ante las nuevas características del entorno, a buscar formas diferentes a las tradicionales para enfrentar los grandes desafíos de un mercado altamente competitivo y de calidad, las empresas se ven obligadas a implementar sistemas de mejora (Reingeniería) haciendo cambios radicales desde su estructura hasta el producto final, con el objetivo de mejorar todos los procesos que se realizan dentro de estas, reducir sus costos y ofrecer productos de calidad satisfaciendo los gustos y características solicitadas por los clientes.

## Objetivo general

- Implementar un sistema de reingeniería dentro de la empresa de servicios de serigrafía.

## Objetivos Específicos

- Mejorar procesos de producción.
- Reducir costos por tiempos muertos y desperdicios de materia prima.
- Mejorar la calidad de nuestros productos.

## Metodología: Mixta, Documental y De Campo

La investigación es mixta porque se cuenta con datos numéricos, comparación de resultados, instrumentos predeterminados, así como la descripción, análisis y desarrollo de temas, es documental y de campo porque se manejan distintos tipos de herramientas para el estudio y comprensión de cada debilidad dentro de la empresa.

## Desarrollo del Tema

A continuación se presenta el uso de la reingeniería aplicada a VIANNLY S.A DE C.V. En la situación que se encontraba VIANNLY era difícil obtener resultados rápidos y satisfactorios tanto para el cliente como para el trabajador, en consecuencia de eso y para poder seguir compitiendo en el mercado se realizaron cambios dentro de la misma donde todos colaboraron en la reestructuración.

## DESCRIPCIÓN DE LA EMPRESA

La empresa está dedicada a la impresión digital en playeras, brindando a nuestros clientes variedad en el producto.

## Misión

Ser una empresa dedicada a transformar las necesidades de los clientes a través de diseños, procesos y tecnología de vanguardia, ofreciendo productos de alta calidad.

## Visión

Ser una empresa donde la interacción con nuestros clientes y proveedores sea más eficiente y rápida, a través del uso de la tecnología y de estar anticipados a los cambios que exija el mercado.  
Propuesta de Valor

Productos de entrega inmediata y mejor calidad para el cliente.

#### Valores

- Respeto
- Responsabilidad
- Tolerancia
- Equidad
- Puntualidad
- Igualdad

#### Objetivos

- Abarcar una mayor parte del mercado ofreciendo productos de calidad
- Analizar el desenvolvimiento del mercado a fin de establecer productos a un precio más bajo
- Que el cliente quede satisfecho con el producto
- Poder competir en el mercado

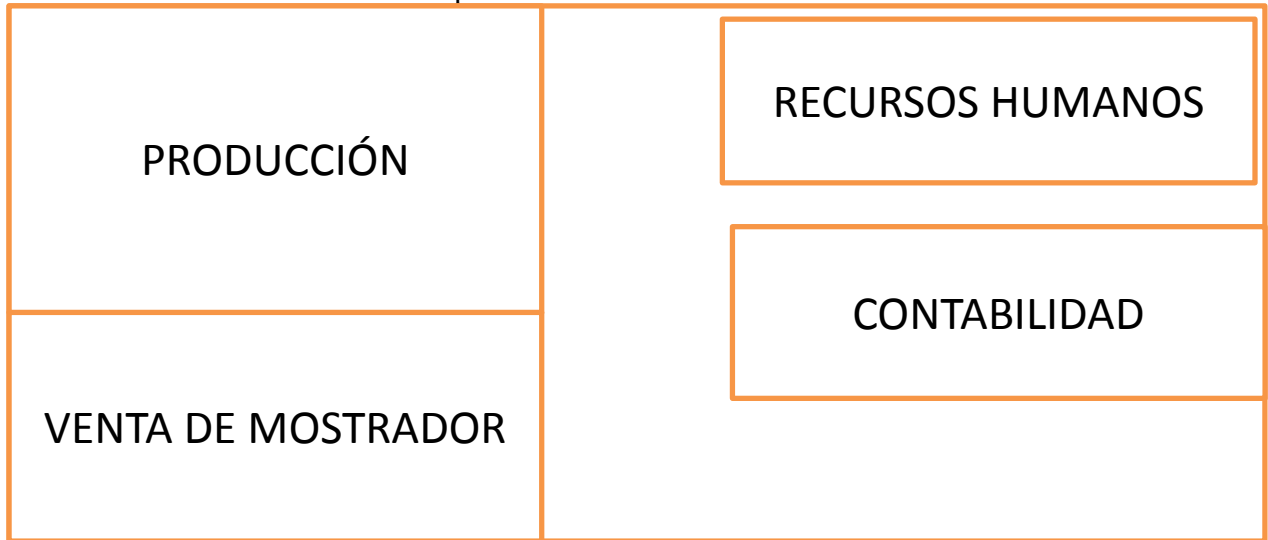
#### Insumos

- Impresora digital
- Playeras
- Tintas
- Máquina de planchado

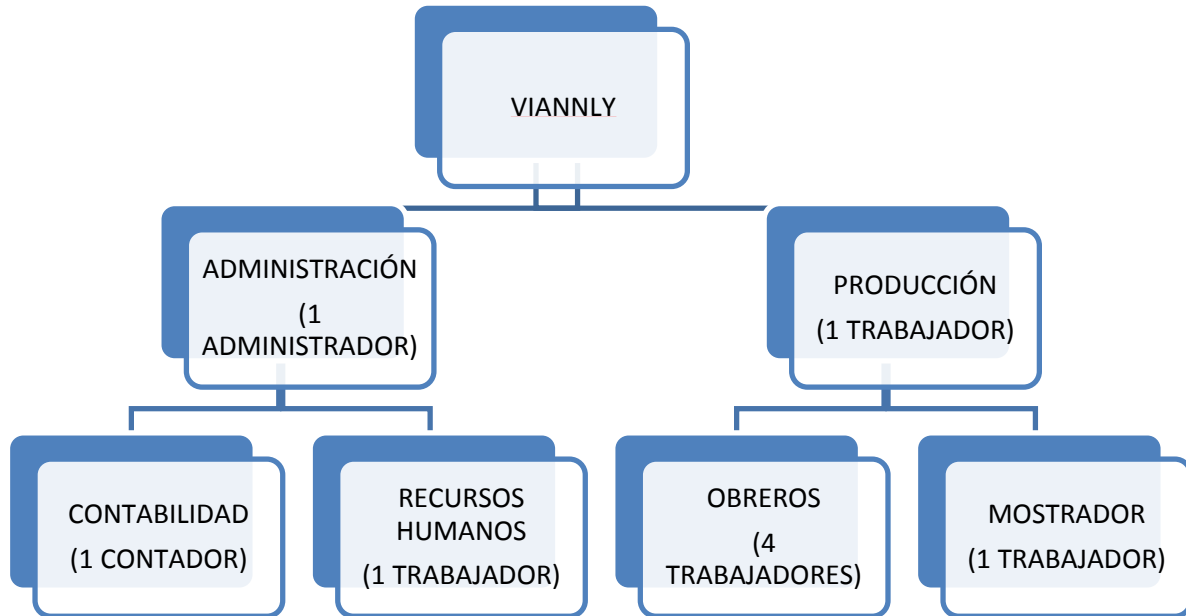
#### Capacitación

- Curso de capacitación para el manejo de la maquinaria
- Curso-Taller de software especializado para diseño

Reestructuración de áreas de la empresa



Fuente: Aportación propia.



Fuente: Aportación propia.

## PROCESO APLICANDO REINGENIERÍA

1. Escoge la imagen o diseña el arte que quieres estampar en la playera Algunas ideas para el estampado pueden ser: una foto digital, un diseño artístico abstracto o un slogan.
  - Usando un software para diseño gráfico, crea o edita el arte para tu playera como lo desees. Usando el software, invierte la imagen o el arte horizontalmente.
2. Colocación de la playera. La playera a estampar tiene que estar perfectamente acomodados sin arrugas ni pliegues para no tener problemas con el estampado.
3. Inicia el proceso de estampado con tan solo tocar un botón ya que la maquina esta previamente programada.
4. Planchado, cuando el proceso de estampado término solo se debe planchar la prenda y no tener contacto con otras playeras para que el estampado no pudiera dañarse hasta que este fría, cabe destacar que el planchado es a una temperatura baja ya que solo es para reafirmar.



*Fuente:* Aportación propia.

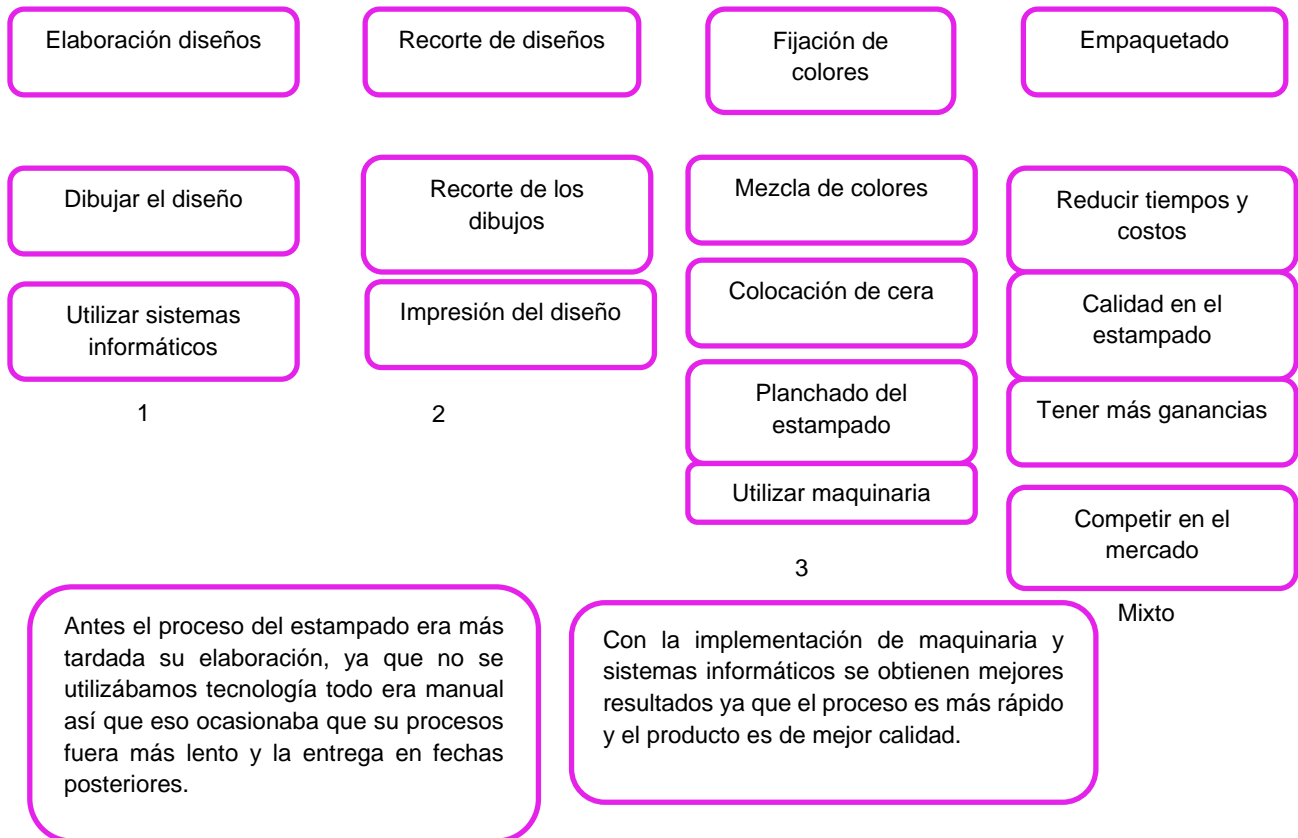
## HERRAMIENTAS DE LA REINGENIERÍA

### Brainstorming (tormenta de ideas)

- El proceso de elaboración del estampado es muy lento
- Reducir procesos en la elaboración del estampado
- El estampado es prenda por prenda
- No más de tres pedidos a la vez
- La entrega del producto es muy tardada
- Los diseños no suelen verse igual
- Los colores son opacos
- Costos más altos
- No se pueden utilizar más de tres colores
- Utilizar maquinaria
- Utilizar sistemas informáticos

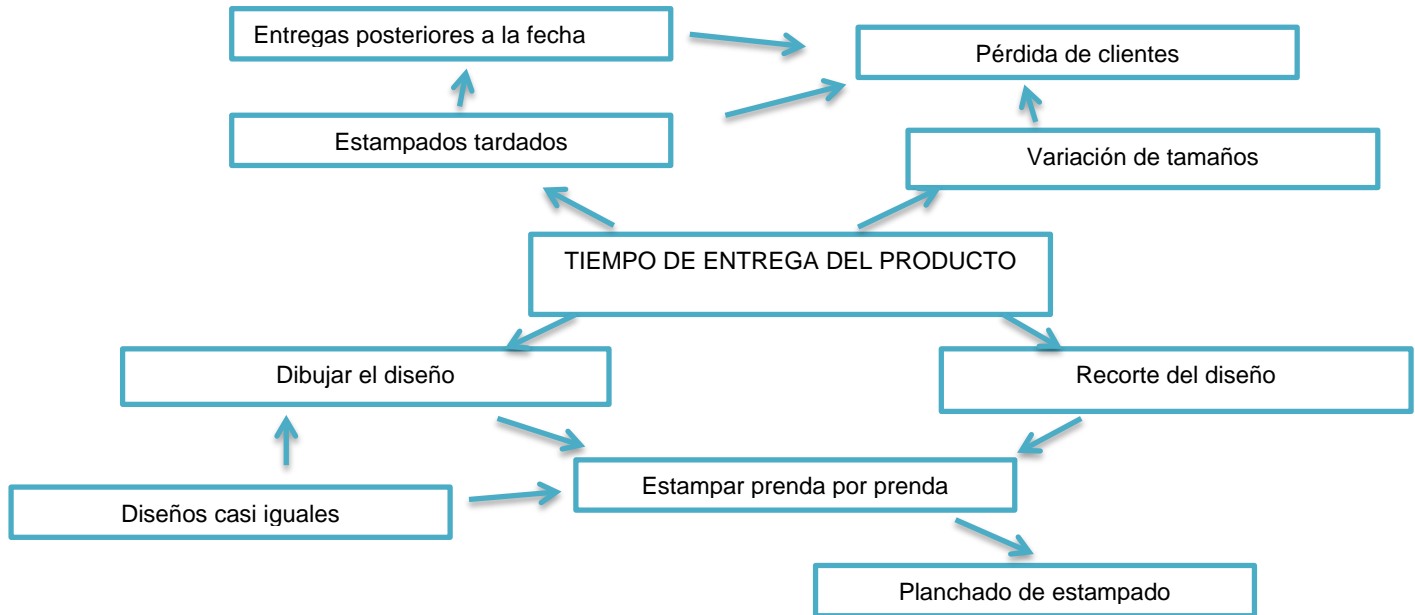
- Reducir procesos
- Que los diseños sean más rápidos de elaborar
- Los diseños sean idénticos
- Utilizar más colores
- Los colores sean más brillantes
- La entrega sea en menor tiempo
- Estampar desde tres prendas
- Tener más pedidos
- Reducir costos
- Poder competir en el mercado

### Diagrama de Afinidades



*Fuente:* Aportación propia

Diagrama de interrelaciones



Fuente: Aportación propia

Matriz de actividades con problemas

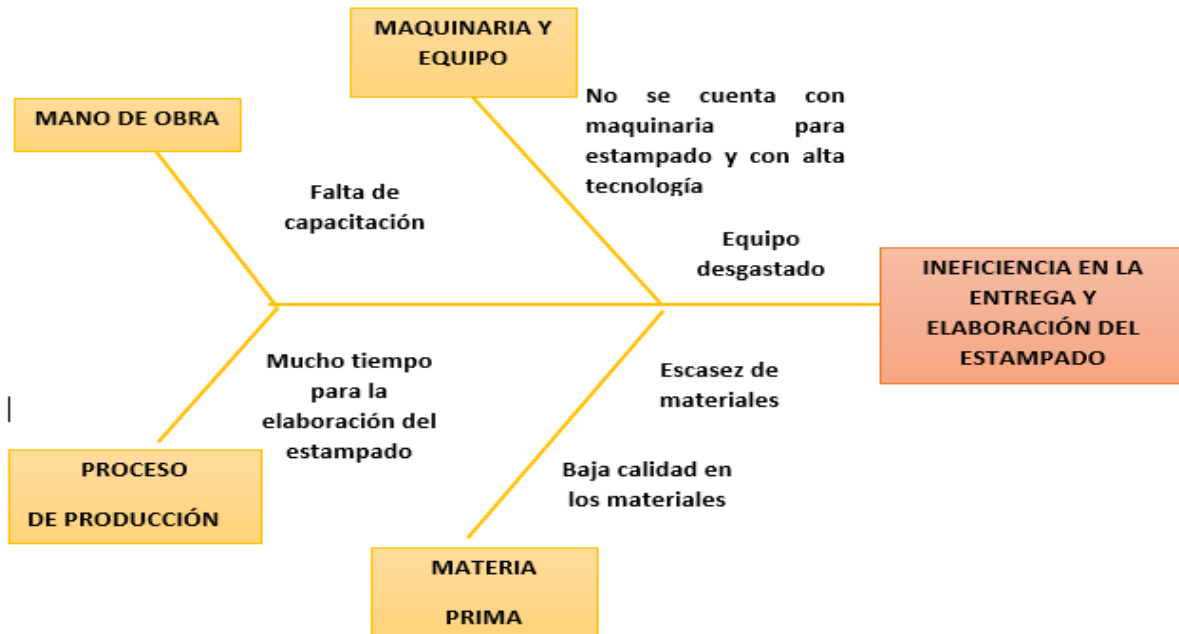
PROCESO: Estampado de playeras

ACTIVIDADES PRINCIPALES	TIPOS DE PROBLEMAS				TOTAL DE PROBLEMAS POR ACTIVIDAD
	FALTA DE CAPACITACIÓN	LLEVA DEMASIADO TIEMPO	BAJA CALIDAD	FALTA DE MAQUINARIA	
PLAYERAS MANCHADAS	X		X	X	3
DESPRENDIMIENTO DE DISEÑO			X	X	2
QUEMADURAS EN LAS TELAS		X		X	2
EXCESO DE DESPERDICIO DE MP	X	X		X	3
TRABAJOS INCOMPLETOS		X		X	2
<b>FRECUENCIA DE LOS TIPOS DE PROBLEMAS EN LAS ACTIVIDADES PRINCIPALES</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>5</b>	

Fuente: Aportación propia



Diagrama de Ishikawa o de causa y efecto



Fuente: Aportación propia

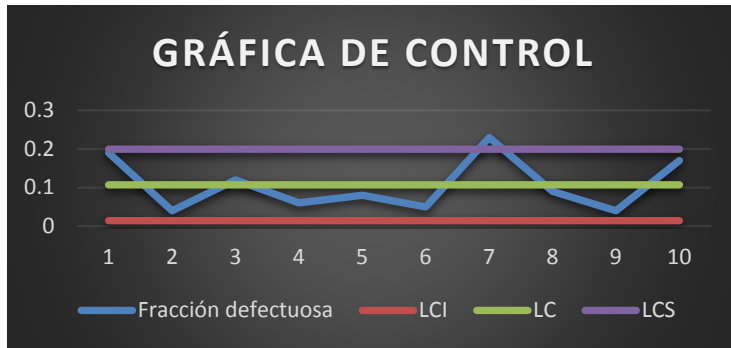
GRÁFICO DE CONTROL

Se producen playeras por órdenes de proceso (lotes) 100 piezas, los registros de inspecciones de los últimos 10 lotes muestran lo siguiente:

No. De lote	No. De playeras defectuosas	Fracción defectuosa
1	19	0.19
2	4	0.04
3	12	0.12
4	6	0.06
5	8	0.08
6	5	0.05
7	23	0.23
8	9	0.09
9	4	0.04
10	17	0.17

DEFECTOS

- 1.- Playeras manchadas
- 2.- Desprendimiento del diseño
- 3.- Diseños incompletos
- 4.- Quemaduras en la playera
- 5.- Falta de sellador

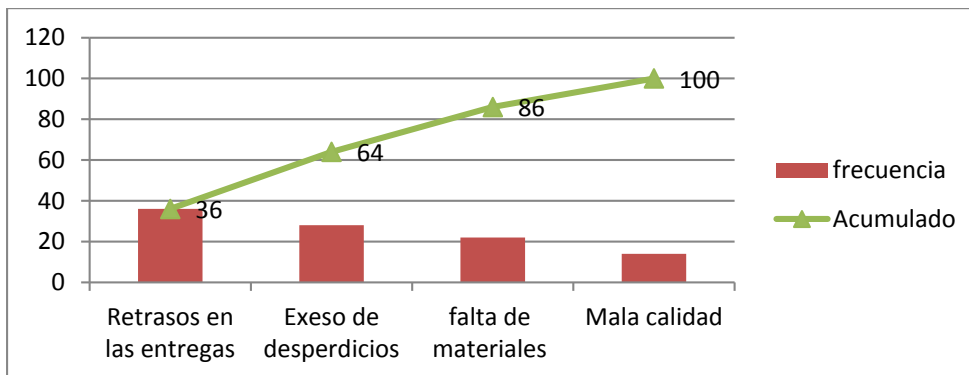


Fuente: Aportación propia

### Diagrama de Pareto

En este diagrama se muestran los problemas por incidencia, en orden decreciente y al mismo tiempo se indica la participación porcentual individual y acumulada. Este tipo de análisis, además de resultar ágil y práctico, requiere poco esfuerzo, permite concentrar esfuerzos en pocas causas fundamentales, dejando las causas triviales para ser atacadas posteriormente.

Problemas	frecuencia	% de Total	% acumulado
Retrasos en las entregas	18	36	36
Exceso de desperdicios	14	28	64
falta de materiales	11	22	86
Mala calidad	7	14	100
	50	100	



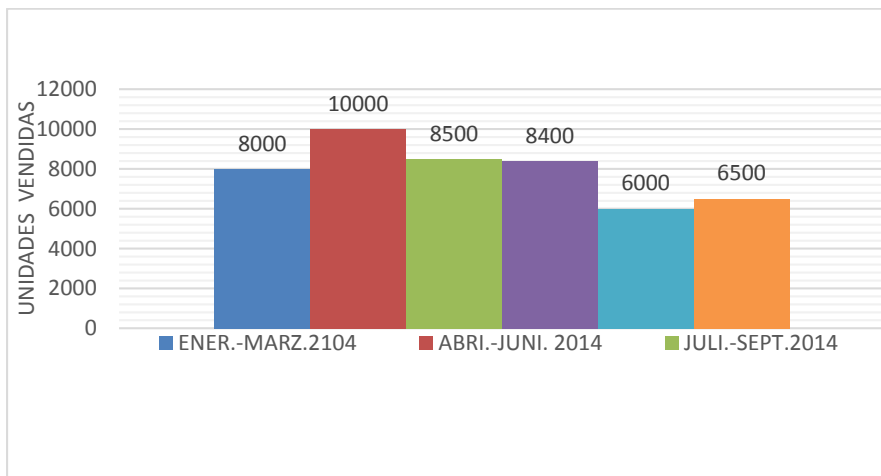
Fuente: Aportación propia

## Histograma

Se realiza un histograma de unidades vendidas del año 2014 y lo que va del 2015 para analizar las ventas de la empresa.

PERIODOS	VENTAS EN UNIDADES	
ENER.-MARZ.2104	8000	Unidades.
ABRI.-JUNI. 2014	9500	Unidades.
JULI.-SEPT. 2014	8200	Unidades.
OCTU.-DIC.2014	8100	Unidades.
ENER.-MARZ. 2105	6500	Unidades.
ABRI.-JUNI. 2015	7000	Unidades.

Debidos a los problemas que se han presentado en la producción y la gran competencia en el mercado en el histograma se muestra como las ventas han empezado a disminuir en lo que va del año.



Fuente: Aportación propia

## BENCHMARKING

Objetivo del benchmarking es compararse con los mejores y adoptar sus buenas prácticas.

Técnica utilizada

Serigrafía

- Es una de las técnicas de estampación más importantes y depuradas. La serigrafía es una técnica de impresión en la que el estampado se realiza haciendo pasar tinta a través de una malla que ha sido bloqueada en parte para obtener un diseño, la tinta fluye por las zonas no bloqueadas hacia el soporte.

A esta malla tensada en un bastidor se la llama shablón, viene a constituir la matriz que se empleará para repetir el mismo diseño cuantas veces sea requerido.  
Para forzar el paso de la tinta a través de la malla se utiliza una espátula con una base de goma llamada comúnmente rasero, manigueta o simplemente espátula

#### Técnicas utilizadas por otras empresas en el Mercado

- **Rásfers o serigrafía de plastisol**  
Es la técnica mediante la cual el grafismo se imprime por serigrafía a un soporte de papel llamado “transfer” por sus propiedades de transferir la tinta a otro material. Posteriormente la impresión del transfer se aplica en el artículo mediante presión y calor.
- **Vinilo textil de impresión y corte / Estampación con Xtransfer (Diseños a todo color)**  
El vinilo es un material flexible que se fija por calor. La impresión se realiza con plotter de impresión. El grafismo se imprime sobre un soporte plástico de doble capa y al mismo tiempo se va cortando la capa impresa mediante control digital. Cuando la capa impresa está cortada a la medida del logotipo se transfiere sobre el producto mediante presión y calor.
- **Sublimación**  
Sistema de impresión mediante transfer de papel en serigrafía o impresión digital transferido con calor y presión. La sublimación es por definición un cambio de estado físico; es decir el pasaje del estado sólido (tinta seca en el papel) al estado gaseoso (por acción del calor de una prensa térmica) sin pasar por el estado líquido.
- **Bordado**  
Es la técnica en la que el logo va cosido en el producto. Primero hay que introducir el diseño original a bordar en un software específico para sacar el programa de bordado llamado picaje (cinta, programa o punchado) para que se realice el dibujo, el fichero resultante se configura en la máquina que cose el logo en el artículo, color por color para luego bordar sobre la prenda en cuestión.

#### RESULTADOS EN LA APLICACIÓN

De acuerdo a las herramientas de reingeniería aplicadas se encontraron distintas ventajas y desventajas que tiene la empresa, se desarrolló un sistema de mejora obteniendo resultados en cuanto a reducción de costos, satisfacción del cliente y mayor demanda en el mercado.

Desde el inicio de la reingeniería es de mucha ayuda que los empleados se involucren con los cambios ya que esto hace que se comprometan en mayor forma y generen mejores resultados.

Al implementar el brainstorming los empleados fueron tomados en cuenta y dieron opiniones que además de ser de gran ayuda para la empresa, sirvió para que ellos se sintieran parte de la empresa, reflejándolo en su desempeño laboral.

Al realizar la Matriz de actividades con problemas los empleados pudieron identificar los errores dentro de sus actividades y brindar soluciones para corregir estos problemas esto nos ayudó mucho en la reducción de costos.

Se mejoraron los procesos de producción y calidad en el producto, desechando tareas duplicadas y reduciendo desperdicios de materia prima.

Se obtuvo una ventaja competitiva al poder entregar productos en menor tiempo por la aplicación de herramienta tecnológica agilizando los procesos de producción.

### CONCLUSIONES

Al utilizar un sistema de reingeniería dentro de la empresa se pudo obtener resultados satisfactorios ya que no sólo trata de mejorar los procesos existentes, sino de cambiar los procesos por completo desde la raíz, para hacerlos lógicos y eficientes.

La reingeniería en la empresa ayuda a dinamizar los procesos y reducir los costos, eliminando tiempos muertos y tareas duplicadas, además que el sistema de reingeniería puede ser utilizado para cualquier tipo de empresas que quieran realizar un cambio dentro de ellas, fortaleciendo su estructura. Cabe resaltar que la reingeniería no es una vía de solución a los problemas de la organización, sino que debe existir un compromiso y participación de los directivos ante una preparación, una visión, una solución de diseño técnico y social.

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## **El bullying docente**

SUSANA LEEN ESCOBEDO HUERTA<sup>1</sup>  
*Universidad Tecnológica de Nuevo Laredo*  
*Nuevo Laredo, Tamaulipas, México*

*A lo largo de la historia se ha tenido registro de agresiones por parte de los docentes hacia los estudiantes, sobre todo de niveles académicos básicos, ya que por su edad no habían desarrollado herramientas para defenderse.*

*El bullying es una agresión física o psicológica al que someten, de manera regular, a un alumno, sus compañeros. Sin embargo se puede hablar también de ésta actividad fomentada por los mismos docentes como un maltrato ejercido por profesores en contra de los alumnos, ya sea directamente o por omisión, ya que actualmente son menores los casos de intervención física.*

*Se hablará de que las nuevas generaciones pudieran estar influenciadas por una ola de bullying provocada por aquellos quienes pretenden educar, formar o informar al futuro del país.*

## **The Teacher's Bullying**

*Throughout history, there have been records of assaults by teachers towards students, especially in elementary schools. This is because at their age, they have not developed the tools to defend themselves.*

*Bullying is a physical or psychological violence suffered by the victim on a regular basis by their classmates. However, this type of attitude may also be provoked by the teachers from a mistreatment done against the students, directly or by omission, since nowadays there are less cases of physical aggression.*

*We will talk about how new generations can be influenced by a “wave of bullying” caused by those who intend to educate, form or inform the future of the country.*

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<sup>1</sup> Address correspondence to Susana Leen Escobedo Huerta, Universidad Tecnológica de Nuevo Laredo, Nuevo Laredo, Tamaulipas, México. E-mail: [sescobedo@utnuevolaredo.edu.mx](mailto:sescobedo@utnuevolaredo.edu.mx)

# The Importance of English Language Learning

MARTHA ELIDA GUANTOS<sup>1</sup>  
*Universidad Tecnológica de Nuevo Laredo*  
*Nuevo Laredo, Tamaulipas, México*

Language is considered to be a tool for thinking, which implies a superior order of reasoning, natural to the human being. Complex and differentiated systems of language and thinking are closely related by communication which takes place in a specific language.<sup>2</sup> UNESCO (United Nations Agency for Education, Science and Culture) pointed out that educational systems around the world must teach their students on how to deal with new challenges on a global scale, where multiple exchanges between different languages and cultures are made every day. Education must be focused on trying to help students respect and understand different culture expressions in their own country and around the world.

Teaching English as a Second Language is an important piece in modern school curriculums from Basic Education to Higher Education, since knowing another language is an important competence that students must develop during his or her educational and formative process.

According to this perspective, the Mexican Ministry of Public Education acknowledges the necessity of including an English subject in every curriculum of each educational level. From kindergarten to University, the purpose of teaching English as a Second Language is to achieve higher scores and much better quality educational results, so Mexican students may be able to compete at a global scale among other students from different parts of the world.

However, teaching English as a Second Language in Public Schools all over Mexico has become an ambitious and challenging project over the past decade, and the results for the last couple of years haven't been exactly what the Educational Authorities have been expecting. According to Forbes Magazine, "The English First Initiative" (EFI) tested different students in many different countries with their famous English Proficiency Index Test (EF EPI) which is also the most accurate score scale regarding English Language Learning, Fluency and Acquisition.<sup>3</sup>

According to the results of the English Proficiency Index Test, after testing sixty different countries, EF EPI includes for the very first time a thorough analysis regarding language learning tendencies. This analysis, which test is available online, at the "Englishtown" website, clearly shows that Mexico must be focusing more on English Language Acquisition, since the results went down from moderate to low level.

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<sup>1</sup> Address correspondence to Martha Elida Guantos, Universidad Tecnológica de Nuevo Laredo, Nuevo Laredo, Tamaulipas, México. E-mail: [mguantos@utnuevolaredo.edu.mx](mailto:mguantos@utnuevolaredo.edu.mx)

<sup>2</sup> Estrategias cognitivas en la enseñanza del inglés técnico-científico: Una experiencia. Autores: María de Lourdes Acedo de Bueno, Leticia Estévez. Localización: Anales de la Universidad Metropolitana, ISSN-e 1856-9811, Vol. 3, N°. 2, 2003, págs. 75-94

<sup>3</sup> Revista FORBES Mexico Nov 5, 2013



Mexico is among the only four Latin countries that scored “Low” at the EF EPI, appearing just below Argentina, Uruguay, Costa Rica, Brazil and Peru. In order for Mexico to successfully integrate every classroom in the country with an English teacher, it will need between 150 to 180,000 English teachers.

Ever since 1992, the United States of America have become Mexico’s main trade partner, however, the test scores clearly showed that only those students from the north part of Mexico and those who live close to the border, reached higher scores compared to those who live in the southern states.

Which leads us to conclude that geography makes an important difference regarding Language Learning Process, since students from the north are closer and exposed to the English Language as well as to the American Culture itself, which is also an important piece when it comes to Language Learning.

Also many American companies are established along the border and Northern territories as well and demand bilingual professionals in the field as well as workforce.

It is important to acknowledge that Higher Education should be emphasized on professional and specialized formation and training, so including English terms in every school subject and assignment, as well as technical lexicon and common expressions, in order for students to be bilingual and prepared to face professional challenges once they get a job, must be a top priority.

This is why teaching English as a Second Language has been a very challenging task for every teacher in Mexico, since this job should not be reduce to only being able to teach students how to express themselves, but also to solve problems, manage, plan and analyze as well as developing the ability for rational thinking by using both languages at the same time.

# La mercadotecnia educativa, el negocio de la educación

ANA ALEJANDRA OROZCO CARRILLO<sup>1</sup>  
Universidad Tecnológica de Nuevo Laredo  
Nuevo Laredo, Tamaulipas, México

*La elección de su carrera profesional es la primera gran decisión que un joven debe realizar, este proceso es actualmente guiado por estrategias mercadológicas que las instituciones de educación superior desarrollan con el fin de alcanzar cuotas de ingresos necesarias para su crecimiento. Si bien las universidades en su mayoría cumplen con una oferta educativa atractiva y pertinente no siempre el joven toma una decisión que satisfaga su vocación, sino que responde a una campaña de mercadotecnia bien diseñada y su exitosa implementación a través de una estructura de ventas especializada.*

**PALABRAS CLAVE**      *Estrategias mercadológicas, cuotas de ingresos, oferta educativa, vocación.*

## Educational Marketing: The Business of Education

*Choosing a professional career is the first big decision a young man or woman must realize; this process is guided by the marketing strategies that universities develop in order to reach the registration goals necessary for their growth. While most universities meet with an attractive and relevant education offer, the student will not always take the decision that will satisfy his or her vocation, but responds to a well-designed and successfully implemented specialized sales structure marketing campaign.*

**KEYWORDS**      *Marketing strategies, goals of registration and income, educative offer, vocation.*

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<sup>1</sup> Address correspondence to Ana Alejandra Orozco Carrillo, Universidad Tecnológica de Nuevo Laredo, Nuevo Laredo, Tamaulipas, México. E-mail: [arozco@utnuevolaredo.edu.mx](mailto:arozco@utnuevolaredo.edu.mx)

# **Seguridad informática: peligros que existen por falta de educación**

LIC. ABRAHAM ROGELIO DEL CARMEN DE LA PEÑA<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*En esta investigación se preocupa por analizar con más complejidad un problema del siglo XIX la cual está siendo un tema de interés de investigación muy detallado en la cual tenemos la seguridad informática, siendo un tema de cuestiones muy importantes en las que se debe analizar con detalle y a su vez un análisis detallado para prevenir las amenazas las cuales se encuentran en el mundo digital causando daños en algunos casos irreparables en los usuarios del internet y sus ventajas. En este mundo digital ha modernizado la manera de la comunicación y la eficiencia, provocando una rápida respuesta.*

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<sup>1</sup> Address correspondence to Lic. Abraham Rogelio Del Carmen De La Peña, División de Estudios de Posgrado, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. E-mail: [rogeliodelcarmen@gmail.com](mailto:rogeliodelcarmen@gmail.com)

# Las tecnologías de la información y su impacto en la calidad educativa en México

JESSICA GUERRERO RIVERA<sup>1</sup>  
Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México

*Las tecnologías suelen quedar obsoletos en poco tiempo y el problema se deriva de varios aspectos: Las frustraciones de los docentes al utilizar las TI y es común debido a que estaban acostumbrados a la modalidad tradicional de enseñanza, no hay seguimiento en cuanto a reparación de equipos, los controles de acceso a los dispositivos y al Internet por cuestiones de distracción. Esta investigación pretende proponer una solución factible para contar con programas de formación para el uso y aprovechamiento de los recursos de TI para un buen nivel de enseñanza reclutando docentes o gente especializada en el ramo para que lleven a cabo las capacitaciones, basado en las tres posiciones de Pelgrum y Lay (2003). Realizar un estudio de las instalaciones en los planteles en México para indicar cuáles serían los recursos de acuerdo a las necesidades de cada nivel educativo, implementar un plan de mantenimiento y actualizaciones a los equipos de cómputo, software, red y las herramientas utilizadas.*

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<sup>1</sup> Address correspondence to Jessica Guerrero Rivera, Division de Estudios de Posgrado e Investigacion, Facultad de Comercio, Administración y Ciencias Sociales de Nuevo Laredo, Universidad Autónoma de Tamaulipas, Nuevo Laredo, México. Email: [jezy\\_gro@hotmail.com](mailto:jezy_gro@hotmail.com)

# **Utilización del método equipos de trabajo en el posgrado orientado a la creación de empresas internacionales con base universitaria**

LIC. CARLOS LANDEROS GARCÍA, MNL<sup>1</sup>  
*Universidad Autónoma de Nuevo León*  
*Monterrey, Nuevo León, México*

*Esta investigación presenta y analiza los resultados obtenidos de los estudiantes de Maestría de la Facultad de Contaduría Pública y Administración de la Universidad Autónoma de Nuevo León, de las percepciones de éstos sobre la intención, el emprendimiento y los equipos de trabajo como detonantes para la creación de empresas con base universitaria. Los resultados muestran una intención de los estudiantes hacia la creación de empresas con base universitaria, un aspecto favorable hacia el emprendimiento y una excelente percepción hacia los equipos de trabajo, haciendo factible la creación de empresas desde el posgrado.*

**PALABRAS CLAVE**      *Intención, emprendimiento, equipo de trabajo, empresas con base universitaria.*

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<sup>1</sup> Address correspondence to Lic. Carlos Landeros García, MNL, Universidad Autónoma de Nuevo León, Monterrey, Nuevo León, México. E-mail: [carlos.landerosgarcia@uanl.edu.mx](mailto:carlos.landerosgarcia@uanl.edu.mx), [carlos.landeros.garcia@gmail.com](mailto:carlos.landeros.garcia@gmail.com)

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### ABREVIATURAS Y TÉRMINOS TÉCNICOS

GEM	Global Entrepreneurship Monitor
CEDIM	Centro de Estudios Superiores de Diseño de Monterrey
RAE	Real Academia Española
U.N.A.M.	Universidad Autónoma de Nuevo León
I.P.N.	Instituto Politécnico Nacional
I.T.E.S.M.	Instituto Tecnológico y de Estudios Superiores de Monterrey
CEDEEM	Centro de Desarrollo Empresarial
U.A.N.L.	Universidad Autónoma de Nuevo León
SPSS	Statistical Package for Social Sciences. Paquete estadístico para las ciencias sociales.
TCP	Teoría del Comportamiento Planificado

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## INTRODUCCIÓN

En la actualidad la importancia de crear empresas altamente competitivas es imperante ante la internacionalización que se vive. Durante los últimos años, se ha visto una dificultad para el crecimiento económico en México, altibajos presentados desde hace más de 20 años generan constantemente incertidumbre de las mejoras económicas que se buscan en todos los países. El crecimiento económico de un país se genera a través de unidades de negocio que operan dentro del mismo y que producen o generan los productos y servicios que se comercializan entre las empresas o personas, haciendo que estas unidades de negocio ya sean micro, pequeñas, medianas o grandes empresas sean el eslabón principal para el crecimiento económico. Sin embargo para la creación de nuevas unidades de negocio es necesario a uno de los actores principales para el surgimiento de dichas empresas: el emprendedor. Dado lo anterior, las Universidades del país juegan un papel trascendental para la creación de bases firmes para el crecimiento económico de los países, pues son las encargadas de generar las intenciones, aumentar el emprendimiento y fomentar el trabajo en equipo, todo esto con miras hacia la creación de empresas y el aprovechamiento de oportunidades en el extranjero.

Durante el presente trabajo se muestra información recabada en diversos artículos de investigación y son presentados en los antecedentes y marco teórico, con base en ello se desarrollan las preguntas de investigación, así como el objetivo de la misma. La hipótesis se prueba mediante regresión lineal de las variables. Se finaliza este documento mediante el análisis de resultados.

## 1. PROBLEMA DE INVESTIGACIÓN

En este capítulo se presentan los antecedentes y descripción del problema, ayudando a formular las preguntas de investigación, objetivos y justificación del presente estudio.

### 1.1. Antecedentes

El desarrollo económico de cada región, en gran parte es responsabilidad de las Universidades de un país, pues son las que generan el personal que se incorpora a cualquier tipo de empresa. Durante muchos años las Universidades han enfocado sus esfuerzos en la capacitación de su alumnado para la adquisición de competencias tanto específicas como generales, pues conforman los pilares básicos de los estudiantes para garantizar la obtención de trabajo una vez fuera de la vida estudiantil (Halasz y Michel, 2011, citados por Jarauta, 2014), existiendo diversos modelos de aprendizaje que tienen la finalidad de prepararlos para que puedan afrontar las nuevas exigencias laborales.

Otro aspecto que juega un papel importante es la intencionalidad en los alumnos. La intención forma parte del proceso de identificación de oportunidades, clave en el alumnado hacia el emprendimiento empresarial o en cualquier otro ámbito (Krueger et al, 2000) pues es el mejor predictor de la conducta planificada (Ajzen, 1991).

En años recientes, las actividades colaborativas han tomado mucha importancia en la vida universitaria, distintos métodos, como los equipos de trabajo, son parte de la metodología que hoy se imparte, dando como resultado cambios importantes en los estudiantes. Entre éstos, se encuentran una mayor responsabilidad, definición de objetivos tanto en lo personal como en lo grupal y toma de decisiones de las actividades a realizar para cumplir con el objetivo trazado, entre otras (Jarauta, 2014). Ayudando así la necesidad de un mercado laboral que urge contar con personal capaz de trabajar en equipo (De la Peña y Herrera, 2012, citados por Jarauta, 2014).

Al igual que los métodos de trabajo en equipo como parte de la nueva demanda laboral, otro factor importante en las universidades es el emprendimiento. Tanta es la importancia en la actualidad que se ha creado el Instituto Nacional del Emprendedor en México, siendo el segundo mejor país en Latinoamérica. Centros de estudios como el I.T.E.S.M., I.P.N., U.N.A.M., CEDIM, entre otros, ya han iniciado programas de emprendimiento recientemente, para que éste sea parte de su cultura y no sólo una materia (Arreola y Cardini., 2014).

Con base en lo anterior, en el siguiente apartado se presenta la descripción del problema que atañe a esta investigación.

### 1.2. Descripción del problema

El interés en años recientes por parte de distintas Universidades del mundo en cuanto a la creación de empresas, se basa principalmente en lo que estas unidades de negocio aportan. Tales unidades



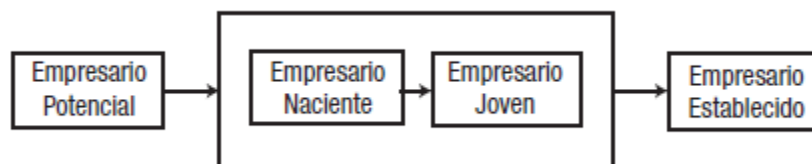
de negocio traen consigo nuevas dinámicas para el proceso innovador, generación de empleos directos, así como un crecimiento económico a la región (Brunet y Amado., 2004)

La enseñanza hoy en día en las Universidades sigue contando con modelos creados hace mucho tiempo, diseñados para capacitar personas y de esta forma satisfacer las necesidades laborales de las grandes empresas, dejando por un lado la capacitación de alumnos que puedan satisfacer las necesidades y oportunidades comerciales que existen en sus propios países como en cualquier parte del mundo.

El modelo educativo que prevalece en México es un enfoque educativo clásico, vigente desde el siglo pasado y que se basa en la memorización por parte de los estudiantes (Lastiri, 2014), sin embargo en la actualidad se requieren modelos que pongan en el ruedo a los estudiantes y que no memoricen teoría, sino que evalúen las posibilidades en mercado y búsqueda de estrategias de entrada, aumentando así las posibilidades de éxito tanto en la creación de empresas, cuestiones económicas y laborales que esto conlleva.

Durante años, se han efectuado muchos trabajos de investigación acerca del concepto de intención, llevándose a cabo con enfoques muy diversos. En cuanto a la creación de empresas se refiere, la intención, se encuentra en aquella persona que no ha iniciado una empresa (Varela, Martínez y Peña, 2010), es decir un empresario potencial, que está en el inicio del proceso empresarial (ver figura 1). Este proceso empresarial, en años recientes se ha llevado a cabo dentro de las Universidades, dando paso al nombre de empresas con base universitaria, a todas aquellas que han sido creadas por los alumnos durante la estadía en los diversos centros de estudio.

**Figura 1:** Proceso empresarial



*Fuente:* GERA (2008) citado por Varela et al (2010).

El trabajo en equipo, se suma a las competencias que se trata de proporcionar a los estudiantes en la actualidad, siendo fundamental garantizar una interacción grupal para el éxito de éstos (Jarauta, 2014). En México, se prepara a las personas en forma individual, un ejemplo claro es que en la educación media o superior son pocas actividades que se hacen mediante el trabajo en equipo y en aquellas ocasiones en que se llega a optar por esta forma de trabajo, se reparte el total de la tarea en partes iguales entre los participantes reuniendo todo al final, siendo esto solo una sumatoria individual. Por si fuera poco, los estudiantes al llegar a las empresas a laboral aplican lo aprendido, enfocan sus esfuerzos de forma individual, pues el desarrollo profesional será evaluado en la competencia de cada persona y no como el éxito del área o departamento. (Luque, 2012).

El emprendimiento como otro factor importante en las Universidades, está impulsado por el ideal de conseguir algo nuevo, algún objetivo trazado o en su defecto el no depender de alguien más (Hisrich et al., 2005). A pesar de que el emprender es algo positivo para la gran mayoría de las personas e incluso para los países, esto debe ser dirigido hacia las oportunidades comerciales

que existan y no tanto para cubrir una necesidad, que de acuerdo al GEM (2006) en los países desarrollados la creación de empresas son debido a oportunidades que existen en el mercado, mientras que en los países en vías de desarrollo, la creación de éstas son con base a la necesidad de cambiar su actividad actual.

La necesidad de creación de empresas no debe de ser en forma individual, los equipos de trabajo son una forma de generar nuevos conocimientos, distribuyendo el trabajo de acuerdo a las competencias que tengan los participantes y a su vez poder estimular de esta forma el desarrollo de nuevas competencias. (García y Cordero, 2008, citados por Martínez, García y Santos, 2014).

El ímpetu mostrado por los emprendedores sin una adecuada base de conocimientos genera dos grandes problemas: por una parte está la creación de negocios con base a la necesidad de la persona y no en cuanto a las oportunidades de negocio, como lo establece el informe del GEM (2008), mientras que por otra parte estas unidades de negocio de reciente creación pronto forman a ser parte de las estadísticas, las cuales indican que 8 de cada 10 mipymes no sobreviven más de 2 años (CNN Expansión, 2013). El emprendimiento debe de ser guiado hacia el aprovechamiento de oportunidades tanto locales como internacionales dando como resultado beneficios económicos para la empresa y la sociedad.

Contando con un modelo de enseñanza que a su vez brinde la posibilidad a los alumnos de crear sus propias empresas se afectaría de forma inversa las estadísticas siguientes: 40% de los egresados universitarios desempleado, 16% de 2.8 millones de profesionistas inactivos y 5 de cada 10 personas con estudios no cuentan con un empleo (Vargas, 2013)

Por lo anteriormente presentado, enseguida se darán a conocer las preguntas de investigación.

### 1.3. Preguntas de investigación

- ¿Es positiva la intención en el alumnado de posgrado hacia creación de empresas con base universitaria?
- ¿El emprendimiento empresarial es positivo entre el alumnado actual del posgrado?
- ¿Cuál es el nivel de aceptación por parte del alumnado hacia el trabajo en equipo?
- ¿La intención, los equipos de trabajo y el emprendimiento ejercen influencia para la creación de empresas con base universitaria?

### 1.4. Objetivos de la investigación

El objetivo de la presente investigación es determinar la relación existente entre la intención, emprendimiento y equipos de trabajo hacia la creación de empresas internacionales con base universitaria.

### 1.5. Justificación

Esta investigación es conveniente pues contribuirá a identificar una nueva forma para la creación de empresas internacionales con base universitaria empleando como plataforma principal la intención, el trabajo en equipo y el emprendimiento (Hernández, Fernández y Baptista, 2010).

Por otro lado, se ofrecerá un valor teórico (Hernández et al., 2010) pues hasta el momento no se ha encontrado suficiente información relacionado a la creación de empresas con base universitaria en las cuales intervengan las variables de intención, emprendimiento y trabajo en equipo.

### 1.6. Viabilidad

La presente investigación se considera viable pues se cuenta con la capacidad de recursos financieros, humanos y materiales necesarios antes y durante la duración del presente estudio. Así mismo la obtención de información es factible, puesto que se cuenta con acceso al alumnado para la aplicación del instrumento de medición a utilizar.

### 1.7. Limitación y delimitación

Por el factor tiempo, el presente estudio solo se enfocara a reunir la información necesaria para evaluar la existencia de alguna correlación de las variables antes comentadas, sin embargo, su evaluación como modelo de negocio no será posible.

El presente estudio se llevará a cabo en la escuela de negocios de la Facultad de Contaduría Pública y Administración de la Universidad Autónoma de Nuevo León ubicada en el municipio de San Nicolás de los Garza.

### 1.8. Aspectos éticos de la investigación

La investigación que se estará llevando a cabo no presenta problemas éticos, pues más que analizar o criticar algo ya propuesto, se estará evaluando la factibilidad del método de trabajo en equipo para la creación de nuevas empresas internacionales, pudiéndose adaptar a los diversos institutos, centros de estudios o Universidades en México, reconociendo a los autores de la información que se utilizó para la realización del presente documento.

En el presente capítulo se dieron a conocer los antecedentes y descripción del problema de esta investigación, así como las preguntas de investigación, objetivos, delimitaciones y aspectos éticos de la misma.

## 2. MARCO TEÓRICO

En el siguiente apartado se dará a conocer una descripción del tema más detallada, así como sus conceptos o variables.

### 2.1. Descripción general del tema

La creación de empresas con base universitaria, lleva consigo más que solo la creación de la unidad de negocio como tal, la creación se encuentra como un paso final de los estudiantes, sin embargo el análisis de las variables previas a este fin son de suma importancia. Las variables de intención, emprendimiento y los equipos de trabajo se detallarán más en el siguiente apartado.

### 2.2. Conceptos o variables

#### 2.2.1. Intención

El entender la intención de las personas es más allá de solo entender los motivos hacia ciertas acciones, es analizar cuestiones psicológicas que mueven a los individuos hacia ciertas acciones.

La intención puede ser asociada a diversos factores como psicológicos, sociales, culturales, éticos, entre otros. La elección que se da por medio de la intención es en base a objetivos que se imaginan en un futuro, este futuro imaginario es a lo que el individuo quiere llegar en su vida y orientar sus acciones para llegar a él. Dichos objetivos pueden ser considerados a corto, mediano o largo plazo (Cañibano, 2006).

La intención en los individuos es lo que nos ayuda a diferenciar los objetivos de las personas de lo que simplemente ellos desean o añoran. Un simple deseo no involucra la acción de la persona y mucho menos la intención pues no se actúa para alcanzarlos. En cambio, la idea de fin o finalidad, provoca una acción orientada por medio de la intención hacia el logro de un objetivo (Cañibano, 2006).

Es importante señalar que la intención se encuentra muy relacionada al emprendimiento, puesto que en un emprendedor, el proceso de identificación de oportunidades es intencional, es decir, que las oportunidades detectadas persiguen un fin. Dando pie a que la intencionalidad sea un factor de suma importancia en el proceso de emprendimiento (Krueger, 1993).

Como se mencionó anteriormente, a pesar de estar sumamente relacionadas, la intención y emprendimiento se distinguen principalmente pues no todas las personas inician un negocio, en algunos casos, se cuenta con la intención más no el emprendimiento necesario para llevarlo a cabo.

La intención que está dirigida hacia el emprendimiento empresarial puede ser entendida con una mayor precisión desde dos modelos de intenciones emprendedoras. Por una parte el Modelo

del Evento Empresarial (Shapero y Sokol, 1982, citado por Karanja et al., 2012) y la Teoría del Comportamiento Planificado (Ajzen, 1991).

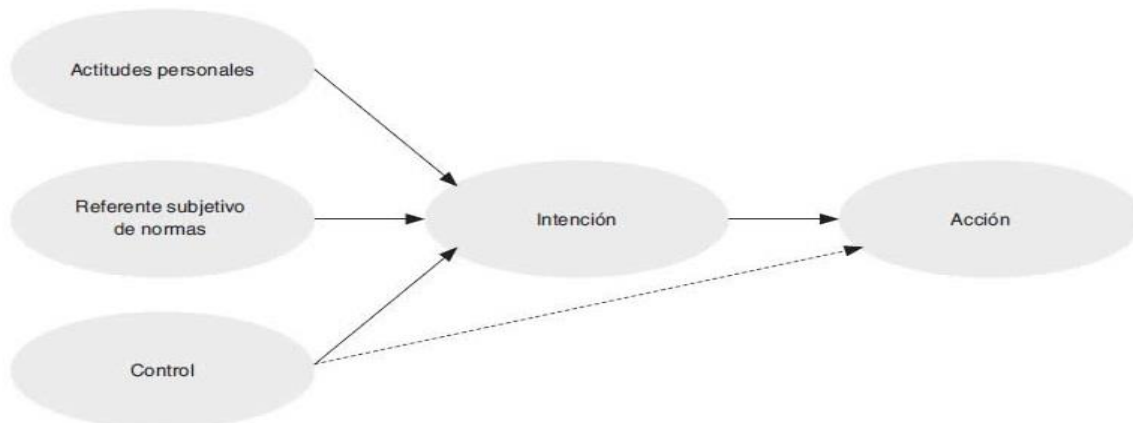
Por considerar que la Teoría del Comportamiento Planificado propuesta por Ajzen (1991) se apega más a lo que se busca en esta investigación, se abordara más sobre la misma. La TCP trata de predecir y explicar la conducta humana en ciertos eventos mediante tres elementos que guían la intención de un fin. Estos tres elementos son las actitudes hacia la conducta, las normas subjetivas y el control percibido de la conducta.

El control percibido de la conducta, se refiere a la percepción que tiene una persona de la facilidad o dificultad que tiene la realización de una acción, lo que lleva al análisis de las oportunidades y recursos de la misma. Desde otro punto de vista, es la percepción de control que se tiene sobre una acción. Esta percepción de control, es influenciada por medio de información que se obtiene por medio de la experiencia vivida por el ejecutor de la acción o el círculo de amigos que proveen de información a éste (Ajzen, 1991).

Las actitudes hacia la conducta, hace énfasis hacia el grado de evaluación que la persona tiene ya sea, favorable o desfavorable, hacia una acción determinada. Este grado de evaluación hacia la actitud de una conducta, se encuentra altamente relacionado hacia los resultados de acciones previas que se hayan vivido, pues se asocian los eventos en positivos o negativos, dándole así evaluación hacia la acción rápidamente (Ajzen, 1991).

Por otra parte, las normas subjetivas, a las que hace mención el modelo de Ajzen (1991), se refieren hacia la evaluación social que se le da a un acto, es decir la percepción que se tiene en la sociedad a realizar una acción, en un lugar determinado. La unión de los tres elementos antes descritos, nos lleva hacia el modelo propuesto por Ajzen (1991) para tener un mayor entendimiento del comportamiento de las personas por medio de la intención de la acción (ver figura 3).

**Figura 2** Teoría del Comportamiento Planificado



*Fuente:* Ajzen (1991).

Por último la TCP, establece que como regla general, una mayor evaluación favorable hacia la actitud, las normas subjetivas y la percepción de control, ocasionará una mayor intención en el individuo hacia la realización de una acción. (Ajzen, 1991)

### 2.2.2. Emprendimiento

El tema de emprendimiento, en los últimos años, ha sido de mucha importancia en todo el mundo, pues se ha asociado como un factor de crecimiento económico de los países así como motor en la generación constante de empleos (Brunet y Alarcón, 2004). El espíritu emprendedor, se da cuando una persona emprendedora está en búsqueda de una oportunidad comercial que sea redituable (Bateman, 2009).

Los emprendedores de acuerdo a la RAE (2015) son personas que emprenden una acción con cierta dificultad. Ahora bien, no existe una figura como tal a seguir para definir con certeza las características que deben de cumplir los emprendedores, sin embargo se han identificados 6 grandes rasgos de suma importancia que aumentan la posibilidad de éxito como emprendedor (Bateman, 2009). Enseguida se enlistan y detallan cada uno de ellos:

1. *Compromiso y determinación*: son aquellos que no se dan por vencido, tenaces y orientados siempre a sus compañías o negocios no importando el costo que esto pudiera requerir.
2. *Liderazgo*: personas sin requerimientos de motivación para seguir adelante, basta su propia motivación. Grandes maestros y aprendices cuando se requiere.
3. *Obsesión por la oportunidad*: en constante apego con los clientes en búsqueda de las necesidades de éstos, dirigidos por el mercado y con miras hacia la creación de valores agregados hacia lo existente.
4. *Tolerancia al riesgo, a la ambigüedad y a la incertidumbre*: toman riesgos que previamente han sido calculados, buscan la respuesta a lo desconocido.
5. *Creatividad, autoconfianza y capacidad de adaptación*: personas con rápido aprendizaje, lo cual les ayuda a la adaptación de acuerdo al ambiente. Hábiles y precisos.
6. *Motivación a la excelencia*: alta orientación hacia los resultados u objetivos, se plantean metas altas pero alcanzables.

### 2.2.3. Equipos de trabajo

Es importante señalar que un equipo de trabajo no es similar a un grupo de trabajo, a pesar de que el término se usa indistintamente. Un grupo, trabaja con la finalidad de compartir información para llegar a la toma de decisiones que apoyen a cada miembro a desempeñarse dentro de área de trabajo, pudiendo ser éstas diferentes para cada uno de los miembros. A diferencia del grupo, el equipo formula una sinergia a través de todos los miembros, siendo el resultado de todos los esfuerzos individuales un desempeño mayor al de trabajar de forma individual (Robbins, 1999).

Dentro de los equipos de trabajo tenemos algunos tipos, los cuales es de importancia señalarlos, pues cada uno de ellos ofrece resultados diferentes. Los equipos de trabajo pueden ser de proyecto y desarrollo, paralelos, administrativos, transnacionales, virtuales y auto dirigidos (Bateman, 2009).

Ahora bien, cada uno de ellos tiene un objetivo específico, los cuales se verán enseguida. Los equipos de proyecto y desarrollo, son equipos diseñados para un largo plazo, es decir más de un año, con la finalidad de trabajar en un solo producto y una vez logrado el objetivo trazado para el producto en particular, suelen desintegrarse. Los equipos paralelos, trabajan separados de su estructura original, sus integrantes son de diferentes áreas o departamentos y su finalidad es recomendar soluciones para un problema en específico, siendo una limitante el que no cuentan con autoridad para implementar las soluciones propuestas (Bateman, 2009).

Por otra parte los equipos administrativos, están formados por los responsables de cada unidad laboral, cuentan con autoridad para implementar las mejoras, ya que los responsables de cada unidad cuentan con poder proveniente de su mismo rango jerárquico. Por su parte, los equipos transnacionales, se componen por miembros que dentro de sus actividades abarcan otros países de donde se encuentran, siendo una característica principal que sus miembros están localizados en diferentes ubicaciones y generalmente son multiculturales. Otro equipo común y que regularmente es una mezcla de los anteriores, es el equipo virtual, los cuales cuentan con la característica que su comunicación es vía electrónica y una de sus mayores dificultades es crear la unión necesaria para el funcionamiento y éxito como equipo, pues el aislamiento es una barrera grande para éste tipo de grupo (Bateman, 2009).

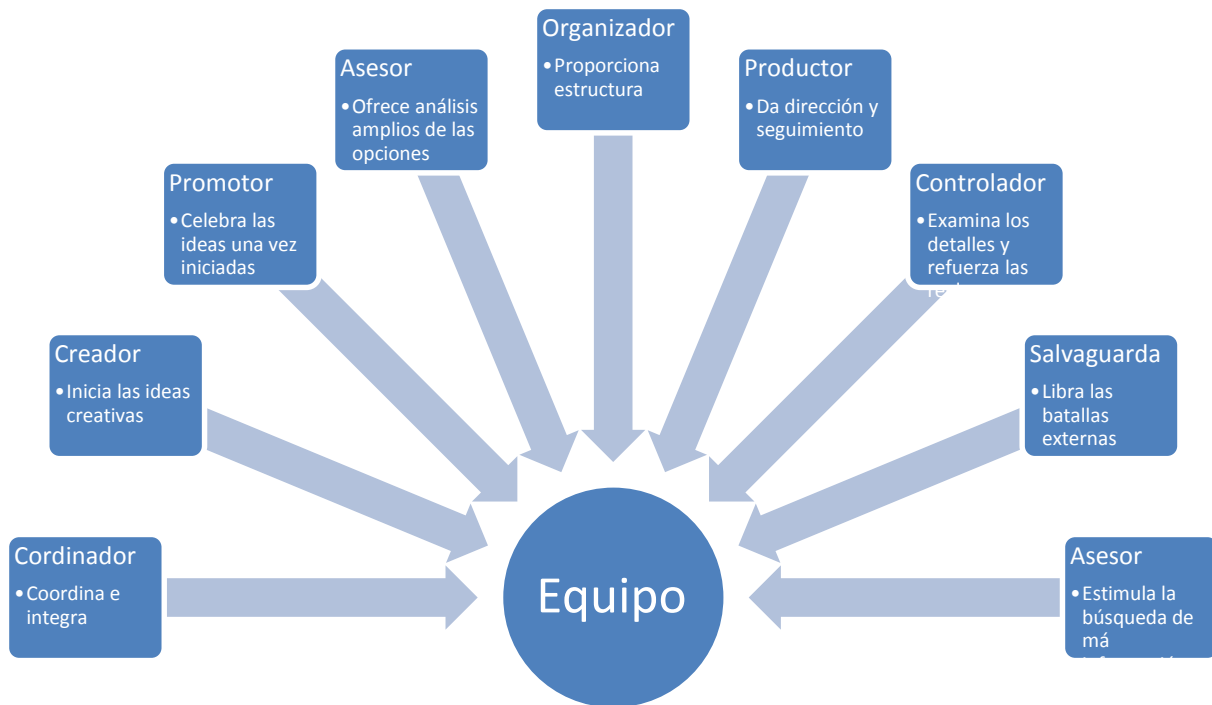
Referente a los equipos, la tendencia hoy en día es hacia los llamados auto dirigidos, al igual que la mayoría, están formados por personal altamente capacitado, o que conoce a la perfección un área determinada, no cuentan con una supervisión directa y cuentan con autoridad para implementar cambios o mejoras. De acuerdo a Bateman (2009), los mayores beneficios que este tipo de grupo ofrece son que son menos costosos, un mejor servicio al cliente y por ende una mayor calidad y más productivos que cualquier otro.

Otro aspecto importante de los equipos de trabajo es la interdisciplinaria. Un equipo interdisciplinario es aquel que se encuentra formado por un grupo de profesionales teniendo de manera compartida el trabajo, enfocados en el cumplimiento de una situación dada (Pizarro, 1981).

El tamaño de los equipos antes mencionados, suele ser un problema, de acuerdo a Robbins (1999), deben ser pequeños, no más de 10 miembros, pues se dificultaría llevar a cabo el objetivo trazado. Más de 10 miembros se enfrentan a problemas de trabajar en forma óptima y llegar a un acuerdo razonable, no desarrollan la cohesión ni la responsabilidad necesaria para llevar al equipo a un alto desempeño.

Como parte de la construcción de un equipo de trabajo, la distribución de los papeles dentro del equipo son de suma importancia, pues cada uno de ellos aporta un valor importante para el éxito del equipo (ver figura 3), sin embargo para que puedan ser efectivos deben cumplir algunos criterios. Estos criterios de acuerdo a Bateman (2009) son que el rendimiento sea productivo, es decir que cumpla con la meta trazada; que los miembros del equipo satisfagan las carencias de otros, en otras palabras que las debilidades de unos se cubran con las habilidades de otros; y por último que los miembros participantes sigan comprometidos con el equipo durante todo el desarrollo del proyecto o meta propuesta.

**Figura 3:** Papeles clave en los equipos



*Fuente:* Robbins, S. (1999). Comportamiento Organizacional. Prentice Hall. 8va Edición

### 3. ESTRUCTURA METODOLÓGICA

En este capítulo se mostrará la metodología, el diseño, hipótesis, muestreo y los resultados de la presente investigación.

#### 3.1. Metodología de la investigación

Esta investigación tiene un alcance descriptivo, teniendo como finalidad obtener información respecto a las variables de intención del alumnado hacia programas de creación de empresas, la aceptación de equipos de trabajo como parte esencial de la creación de unidades de negocio y por último, la percepción del emprendimiento por parte de los estudiantes.

Con la finalidad de llevar a cabo el presente estudio, se diseñará un instrumento de medición, o cuestionario (anexo 1). Un cuestionario es un conjunto de preguntas que se encuentran



relacionadas con una o más variables que se pretenden medir, las cuales son congruentes al planteamiento e hipótesis de cada investigación (Brace, 2008, citado por Hernández et al., 2010).

El cuestionario a aplicar, constará de 24 preguntas respecto a las variables del presente estudio, y 6 respecto a información demográfica, siendo en su mayoría preguntas cerradas, que de acuerdo a Hernández et al., (2010), están previamente delimitadas a ciertas respuestas únicas. El cuestionario está separado en 4 conceptos generales (variables), contando con 6 ítems para cada variable. La medición de los ítems será mediante escala de Likert de 5 puntos en donde las respuestas van de totalmente en desacuerdo, marcado con el número 1, hacia totalmente de acuerdo, marcado con el número 5 (Sánchez, 1998, citado por Segovia, 2014). La escala Likert consiste en un conjunto de ítems en forma de afirmaciones ante los cuales se pide al participante su respuesta seleccionando uno de los 5 puntos o categorías, conociendo así la opinión general respecto a un tema en particular (Hernández et al., 2010). La elaboración del cuestionario se llevó a cabo mediante adaptación de preguntas en tesis doctorales de Segovia, A (2014) y Vázquez, J. (s.f.).

La recolección de información se obtendrá mediante estudiantes actuales y en las condiciones en las que éstos se encuentren, es decir en las aulas o dentro del CEDEEM de la U.A.N.L.

### 3.2. Diseño de la investigación

La presente investigación, cuenta con un enfoque cuantitativo, toda vez que se analizará información recolectada a través del instrumento de medición, llevándose a cabo como no experimental, toda vez que no se pretende establecer un ambiente controlado para medir las variables de intención, emprendimiento y equipos de trabajo. Un estudio no experimental es observar los fenómenos tal y como se llevan a cabo en su forma más natural, sin intervención alguna en el proceso para evitar influir en el comportamiento de éstos (Hernández et al., 2010).

Así mismo se llevará de forma transversal descriptiva, ya que la recolección de los datos se hará en una sola ocasión y no en distintos puntos de tiempo, determinando las variables dentro del grupo a ser encuestado y proporcionar su descripción. Un estudio transversal descriptivo, tiene el objetivo de identificar los niveles de las variables seleccionadas dentro de la población del estudio (Hernández et al., 2010).

El método de muestreo a llevar a cabo será no probabilístico, toda vez que la técnica a utilizar será por conveniencia, que de acuerdo a Malhotra (2008) busca obtener una muestra de elementos convenientes, es decir, que las unidades a muestrear recaen a criterio del investigador.

Enseguida se presentarán las hipótesis del presente trabajo de investigación.

### 3.3. Hipótesis

H1: La intención, emprendimiento, así como los equipos de trabajo determinan la creación de empresas con base universitaria.

### 3.4. Muestreo y/o recopilación de datos secundarios

Para la obtención de nuestra muestra, es importante señalar algunos aspectos básicos sobre ésta. Para este estudio, la unidad de análisis, que de acuerdo a Hernández et al., (2010) pueden ser individuos, organizaciones, periódicos, comunidades, entre otros, serán los alumnos, puesto que se pretende saber la opinión de ellos respecto a las variables antes mostradas mediante la aplicación del instrumento de medición. La población, la cual es un conjunto de casos que concuerdan con ciertas especificaciones previamente identificadas (Sellitz et al., 1980, citado por Hernández et al., 2010) es de 395 alumnos inscritos en algún programa de maestría, toda vez que los alumnos de doctorado no serán contemplados.

Para llevar a cabo la obtención de la muestra se utilizará la siguiente fórmula:

$$n = \frac{(N * Z^2) (p * q)}{E^2(N - 1) + Z^2(p * q)}$$

Donde:

**n** = tamaño de la muestra

**N** = tamaño de la población

**Z** = 1.96, debido a un 95% de nivel de confianza

**E** = error máximo permitido (10%)

**p** = probabilidad de éxito (.5)

**q** = probabilidad de fracaso (.5)

La anterior fórmula se obtuvo mediante el fundamento de una proporción, que de acuerdo a Lind (2004), es una fracción, razón o porcentaje que indica la parte de la muestra o población que tiene una característica particular. Cabe mencionar que el nivel de confianza a utilizar es de 95% y un error de 10%.

### 3.5. Procesamiento de los datos

Para el procesamiento de la información que se obtenga por medio de la aplicación del instrumento de medición se utilizará el paquete estadístico SPSS en su versión 22.

### 3.6. Procedimiento de la investigación

Para la aplicación del instrumento de medición, se llevará en dos etapas. En la primera de ellas, se llevará a cabo una prueba piloto de la encuesta a utilizar, con la finalidad de evaluar la confiabilidad del instrumento. Esta aplicación se llevará de manera presencial, es decir se estará abordando a los alumnos e invitados a realizar de manera voluntaria el llenado del cuestionario. El tamaño de la prueba piloto será de 23 encuestas. En caso de requerirse se estará llevando una segunda prueba piloto de 10 encuestas.

En una segunda etapa y una vez validado el instrumento de medición a utilizar, se estará enviando de forma electrónica a base de datos de alumnos inscritos en algún programa de maestría el link electrónico para que la encuesta pueda ser llenada a través de un dispositivo electrónico con acceso a internet, así mismo,

#### 4. INVESTIGACIÓN DE CAMPO

Durante el presente capítulo se darán a conocer los resultados de la presente investigación, obtenidos mediante la aplicación de una encuesta.

##### 4.1. Presentación y discusión de los resultados

En la presente investigación se realizaron 2 pruebas para validación del instrumento de medición. La tabla 3 muestra el Alfa de Cronbach obtenido durante las pruebas piloto llevadas a cabo. En la primera prueba, los factores de las variables fueron en Intención .414, Emprendimiento .841, Trabajo en equipo de .881 y Creación de empresas de .698. Siendo el factor de Intención muy bajo. De acuerdo a Celina y Campo-Arias (2005) un Alfa de Cronbach entre .70 y .90 muestran una buena consistencia interna, es decir, mide lo que se pretende medir. Una vez modificada la redacción de los ítems de la variable Intención, se llevó a cabo una segunda prueba. Los factores obtenidos en una segunda prueba, fueron de .900 para Intención, .713 para Emprendimiento, .946 para Equipos de trabajo y .711 para la Creación de empresas. Más información respecto a las pruebas piloto en el anexo 2.

**Tabla 3** Alfa de Cronbach en pruebas piloto

Alfa de Cronbach Prueba 1		Alfa de Cronbach Prueba 2	
<b>Estadísticas de fiabilidad Intención</b>		<b>Estadísticas de fiabilidad Intención</b>	
Alfa de Cronbach	N de elementos	Alfa de Cronbach	N de elementos
.414	6	.900	6
<b>Estadísticas de fiabilidad Emprendimiento</b>		<b>Estadísticas de fiabilidad Emprendimiento</b>	
Alfa de Cronbach	N de elementos	Alfa de Cronbach	N de elementos
.841	6	.713	6
<b>Estadísticas de fiabilidad Trabajo en equipo</b>		<b>Estadísticas de fiabilidad Equipos de trabajo</b>	
Alfa de Cronbach	N de elementos	Alfa de Cronbach	N de elementos
.881	6	.946	6
<b>Estadísticas de fiabilidad Creación de empresa</b>		<b>Estadísticas de fiabilidad Creación de empresas</b>	
Alfa de Cronbach	N de elementos	Alfa de Cronbach	N de elementos
.698	6	.711	6

*Fuente:* Elaboración propia

Una vez validado nuestro instrumento de medición, se procedió a llevar las encuestas en su totalidad durante los días del 3 al 5 de agosto del 2015. La parte demográfica del presente estudio arrojó que de la totalidad de los encuestados más del 50% se encuentran en una edad de entre 23 y 26 años, 57.9% de estos son del género femenino y 42.1% masculino. La gran mayoría de los

encuestados son de cuarto trimestre en adelante siendo la especialidad que más predomina la de Finanzas, con un 50% de los casos. (Ver tabla 2 a 8)

**Tabla 4** Resumen encuestas edad

		<b>Edad</b>			
		Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido	21	2	2.6	2.6	2.6
	22	5	6.4	6.4	9.0
	23	14	17.9	17.9	26.9
	24	9	11.5	11.5	38.5
	25	12	15.4	15.4	53.8
	26	11	14.1	14.1	67.9
	27	5	6.4	6.4	74.4
	28	5	6.4	6.4	80.8
	29	3	3.8	3.8	84.6
	30	6	7.7	7.7	92.3
	32	1	1.3	1.3	93.6
	33	1	1.3	1.3	94.9
	35	1	1.3	1.3	96.2
	39	1	1.3	1.3	97.4
	42	1	1.3	1.3	98.7
	50	1	1.3	1.3	100.0
Total		78	100.0	100.0	

Fuente: Elaboración propia

**Tabla 5** Resumen encuestas trimestre

		<b>Tetramestre</b>			
		Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido	1er Tetramestre	14	18.9	19.2	19.2
	2do Tetramestre	4	5.4	5.5	24.7
	3er Tetramestre	6	8.1	8.2	32.9
	4to Tetramestre	19	25.7	26.0	58.9
	5to Tetramestre	18	24.3	24.7	83.6
	6to Tetramestre	12	16.2	16.4	100.0
	Total	73	98.6	100.0	
Perdidos	Sistema	1	1.4		
Total		74	100.0		

Fuente: Elaboración propia

**Tabla 6** Resumen encuestas género

		<b>Género</b>			
		Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido	Masculino	32	41.0	42.1	42.1
	Femenino	44	56.4	57.9	100.0
	Total	76	97.4	100.0	
Perdidos	Sistema	2	2.6		
Total		78	100.0		

Fuente: Elaboración propia

**Tabla 7** Resumen encuesta maestría

		<b>Maestría</b>			
		Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido	Administración	19	24.4	25.0	25.0
	Negocios Internacionales	5	6.4	6.6	31.6
	Contaduría	52	66.7	68.4	100.0
	Total	76	97.4	100.0	
Perdidos	Sistema	2	2.6		
Total		78	100.0		

Fuente: Elaboración propia

**Tabla 8** Resumen encuesta especialidad

		<b>Especialidad</b>			
		Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido	Gestión de Capital Humano	10	12.8	13.2	13.2
	Gestión Pública	2	2.6	2.6	15.8
	Mercadotecnia	4	5.1	5.3	21.1
	Tecnologías de la Información	3	3.8	3.9	25.0
	Auditoría	5	6.4	6.6	31.6
	Contabilidad Internacional	1	1.3	1.3	32.9
	Costos y presupuestos	4	5.1	5.3	38.2
	Finanzas	38	48.7	50.0	88.2
	Impuestos y estudios fiscales	4	5.1	5.3	93.4
	Negocios Internacionales	5	6.4	6.6	100.0
	Total	76	97.4	100.0	
Perdidos	Sistema	2	2.6		
Total		78	100.0		

Fuente: Elaboración propia

Una vez analizado los datos demográficos, se presentan datos relacionadas a las variables de intención, emprendimiento, trabajo en equipo y creación de empresa.

**Tabla 9** Alfa de Cronbach variable Intención

<b>Resumen de procesamiento de casos</b>				<b>Estadísticas de fiabilidad Intención</b>		
		N	%	Alfa de Cronbach	Alfa de Cronbach basada en elementos estandarizados	N de elementos
Casos	Válido	78	100.0	.707	.737	6
	Excluido <sup>a</sup>	0	.0			
	Total	78	100.0			

a. La eliminación por lista se basa en todas las variables del procedimiento.

Fuente: Elaboración propia

**Tabla 10** Estadística variable Intención

**Estadísticas de total de variable Intención**

	Media de escala si el elemento se ha suprimido	Varianza de escala si el elemento se ha suprimido	Correlación total de elementos corregida	Correlación múltiple al cuadrado	Alfa de Cronbach si el elemento se ha suprimido
Me interesaría crear una empresa durante el posgrado	20.09	11.589	.584	.379	.619
Me interesaría crear una empresa pero no tengo socios	20.36	12.207	.395	.196	.685
Me interesaría crear una empresa pero no tengo los recursos suficientes	19.65	13.346	.526	.434	.651
Me interesaría crear una empresa pero no tengo claro el giro de la misma	19.92	12.617	.517	.373	.645
Me interesaría crear una empresa pues he encontrado oportunidades en el extranjero	20.88	11.974	.326	.182	.724
Me interesaría crear una empresa una vez terminado mis estudios de posgrado	19.60	14.295	.418	.281	.680

Fuente: Elaboración propia

**Tabla 11** Alfa de Cronbach variable Emprendimiento

**Resumen de procesamiento de casos**

		N	%
Casos	Válido	78	100.0
	Excluido <sup>a</sup>	0	.0
	Total	78	100.0

a. La eliminación por lista se basa en todas las variables del procedimiento.

**Estadísticas de fiabilidad Emprendimiento**

	Alfa de Cronbach basada en elementos estandarizados	N de elementos
Alfa de Cronbach	.869	6

Fuente: Elaboración propia

**Tabla 12** Estadística variable emprendimiento

**Estadísticas de total de variable Emprendimiento**

	Media de escala si el elemento se ha suprimido	Varianza de escala si el elemento se ha suprimido	Correlación total de elementos corregida	Correlación múltiple al cuadrado	Alfa de Cronbach si el elemento se ha suprimido
Estoy constantemente en busca de nuevas maneras de mejorar mi vida	21.74	12.479	.676	.573	.846
Nada es más emocionante que lograr que mis ideas se conviertan en realidad	21.67	13.628	.583	.479	.861
No importa cuáles sean los riesgos, si creo en algo, trabajo para que ocurra	22.12	12.909	.602	.452	.859
Sobresalgo en la identificación de oportunidades	22.24	12.498	.690	.581	.843
Siempre estoy buscando mejores formas de hacer las cosas	21.91	12.628	.734	.643	.836
Soy capaz de convertir problemas en oportunidades	22.12	12.259	.730	.654	.836

Fuente: Elaboración propia

**Tabla 13** Alfa de Cronbach variable Trabajo en equipo

Resumen de procesamiento de casos				Estadísticas de fiabilidad Trabajo en equipo		
		N	%	Alfa de Cronbach	Alfa de Cronbach basada en elementos estandarizados	N de elementos
Casos	Válido	78	100.0	.879	.882	6
	Excluido <sup>a</sup>	0	.0			
	Total	78	100.0			

a. La eliminación por lista se basa en todas las variables del procedimiento.

Fuente: Elaboración propia

**Tabla 14** Estadística variable trabajo en equipo

**Estadísticas de total variable trabajo en equipo**

	Media de escala si el elemento se ha suprimido	Varianza de escala si el elemento se ha suprimido	Correlación total de elementos corregida	Correlación múltiple al cuadrado	Alfa de Cronbach si el elemento se ha suprimido
Para mí, un beneficio de trabajar en equipo es que da a los miembros un sentido de propósito común	20.81	14.989	.699	.509	.856
Para mí, trabajar en equipo es mejor que el trabajo realizado individualmente	21.08	13.838	.720	.547	.852
Genero mayor cantidad de ideas o soluciones cuando trabajo en equipo que de manera individual	21.08	14.046	.653	.460	.865
En equipo, trabajo de manera efectiva y creativa	20.97	13.843	.788	.657	.840
Si trabajo en equipo el resultado es mayor que la suma de las contribuciones individuales	20.73	14.693	.757	.640	.848
Cuando tengo un problema, trato de resolverlo tomando opiniones de otros	21.10	15.288	.531	.300	.883

Fuente: Elaboración propia

**Tabla 15** Alfa de Cronbach variable creación

Resumen de procesamiento de casos				Estadísticas de fiabilidad Creación		
		N	%	Alfa de Cronbach	Alfa de Cronbach basada en elementos estandarizados	N de elementos
Casos	Válido	78	100.0	.818	.819	6
	Excluido <sup>a</sup>	0	.0			
	Total	78	100.0			

a. La eliminación por lista se basa en todas las variables del procedimiento.

Fuente: Elaboración propia



**Tabla 16** Estadística variable Creación

<b>Estadísticas de total variable creación</b>					
	Media de escala si el elemento se ha suprimido	Varianza de escala si el elemento se ha suprimido	Correlación total de elementos corregida	Correlación múltiple al cuadrado	Alfa de Cronbach si el elemento se ha suprimido
El deseo de probar la habilidad propia en la creación de una nueva empresa	20.79	13.152	.471	.324	.812
El ser independiente	20.51	13.837	.485	.336	.810
Las insuficientes oportunidades en el trabajo habitual	21.04	10.739	.615	.499	.787
La disponibilidad de un equipo de trabajo para la composición de la empresa	21.14	10.772	.722	.586	.756
La disponibilidad de un patrimonio para invertir	20.82	11.630	.675	.496	.769
La disponibilidad de una red de contactos en el mercado potencial	20.76	12.602	.560	.366	.795

*Fuente:* Elaboración propia

Dado los datos anteriores, se puede observar que el instrumento de medición utilizado para llevar a cabo el levantamiento de información es aceptable, es decir que mide lo que se pretende medir mediante los ítems de cada una de la variable en cuestión.

De acuerdo a los gráficos de cada ítem de las variables, se observa un 47.4% referente a estar totalmente de acuerdo en la creación de una empresa en el posgrado, un 34.6% a la intención de crearla más no tener socios, un 62.8% a la intención de crearla más no contar recursos económicos, un 51.3% a la intención de creación más no tener claro el giro en cual participar, un 25.6% a la intención de crear una empresa por haber encontrado una oportunidad en el extranjero y por último un 64.1% en la intención en la creación de la empresa una vez terminados los estudios de posgrado (ver anexo 2).

La parte de la variable de emprendimiento mostró los siguientes resultados. Un 80.8% respecto a estar totalmente de acuerdo hacia una búsqueda de mejorar, un 83.3% hacia el logro de que las ideas de los individuos se conviertan en realidad, un 51.3% respecto a trabajar para que se cumpla una meta sin importar los riesgos, un 42.3% hacia la identificación de oportunidades, un 62.8% hacia la mejores formas de hacer las cosas y un 51.3% hacia el convertir problemas en oportunidades (ver anexo 2)

Por último, se presenta la R-cuadrada obtenida mediante los datos ponderados de las variables, siendo esta .348.

**Tabla 17** Resumen modelo con variables

Modelo	R	R cuadrado	R cuadrado ajustado	Error estándar de la estimación	Estadísticas de cambios					Durbin-Watson
					Cambio de cuadrado de R	Cambio en F	df1	df2	Sig. Cambio en F	
1	.590 <sup>a</sup>	.348	.322	.58395	.348	13.176	3	74	.000	1.873

a. Predictores: (Constante), Equipos, Intención, Emprendimiento

b. Variable dependiente: Creación

Fuente: Elaboración propia

## 5. CONCLUSIONES Y RECOMENDACIONES

Con base a la información presentada con anterioridad, enseguida se presentarán las conclusiones y recomendaciones de ésta investigación.

### 5.1. Conclusiones

Al llevar a cabo la regresión lineal para la obtención de la correlación entre las variables independientes y la variable dependiente, se observa que no existe una alta correlación entre éstas, debido a una R-cuadrada de solo .348. Lo anterior puede ser causa de la incorrecta selección de los ítems de cada una de las variables.

Sin embargo, existe buena información referente a la intención de los alumnos hacia el interés en la creación de empresas con base universitaria. Los datos mostrados en la tabla 18, indican que un 65.3% de los encuestados tienen un interés por crear una empresa durante la estadía en el posgrado, dándonos una posible pauta para llevar a cabo una investigación más a fondo y desarrollar un proyecto integral que facilite la creación de nuevas unidades de negocio.

**Tabla 18** Resumen intención de creación de empresas

Me interesaría crear una empresa durante el posgrado

		Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido	Totalmente en desacuerdo	2	2.6	2.6	2.6
	Parcialmente en desacuerdo	5	6.4	6.4	9.0
	Indiferente	20	25.6	25.6	34.6
	Parcialmente de acuerdo	14	17.9	17.9	52.6
	Totalmente de acuerdo	37	47.4	47.4	100.0
	Total	78	100.0	100.0	

Fuente: Elaboración propia

Por otra parte, en uno de los resultados de la variable emprendimiento nos encontramos con que un 63% de los encuestados está en una constante búsqueda de mejorar su vida, cosa que la creación de una empresa pudiera ser el factor necesario para cubrir dicha necesidad (ver tabla 19).

**Tabla 19** Resumen emprendimiento en la creación de empresas

Estoy constantemente en busca de nuevas maneras de mejorar mi vida

	Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido Totalmente en desacuerdo	3	3.8	3.8	3.8
Parcialmente en desacuerdo	1	1.3	1.3	5.1
Indiferente	4	5.1	5.1	10.3
Parcialmente de acuerdo	7	9.0	9.0	19.2
Totalmente de acuerdo	63	80.8	80.8	100.0
Total	78	100.0	100.0	

Fuente: Elaboración propia

Referente al trabajo en equipo, se puede observar en el alumnado que existe un 61.5% que coinciden en que trabajando en equipo los resultados son mayores que trabajando individualmente. Lo cual se pudiera utilizar con fines en la creación de empresas, pues contribuiría a eliminar factores que impiden la creación de empresas, como lo son el miedo al fracaso, opiniones encontradas respecto a proyectos, falta de capacidad en ciertos rubros, etc. (ver tabla 20)

**Tabla 20** Resumen equipos de trabajo para la creación de empresas

Si trabajo en equipo el resultado es mayor que la suma de las contribuciones individuales

	Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido Parcialmente en desacuerdo	3	3.8	3.8	3.8
Indiferente	9	11.5	11.5	15.4
Parcialmente de acuerdo	18	23.1	23.1	38.5
Totalmente de acuerdo	48	61.5	61.5	100.0
Total	78	100.0	100.0	

Fuente: Elaboración propia.

En las siguientes tablas (tabla 21 a 26) se obtuvieron resultados positivos en cuanto a la creación de la empresa, porcentajes superiores al 50% en su mayoría de cada pregunta hace ver que el alumnado le interesa la creación de empresas con distintas motivaciones.

**Tabla 21** Creación de empresa habilidad propia

El deseo de probar la habilidad propia en la creación de una nueva empresa

	Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido Totalmente en desacuerdo	1	1.3	1.3	1.3
Indiferente	16	20.5	20.5	21.8
Parcialmente de acuerdo	25	32.1	32.1	53.8
Totalmente de acuerdo	36	46.2	46.2	100.0
Total	78	100.0	100.0	

Fuente: Elaboración propia

**Tabla 22** Creación de empresa por ser independiente  
El ser independiente

	Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido Parcialmente en desacuerdo	1	1.3	1.3	1.3
Indiferente	6	7.7	7.7	9.0
Parcialmente de acuerdo	24	30.8	30.8	39.7
Totalmente de acuerdo	47	60.3	60.3	100.0
Total	78	100.0	100.0	

Fuente: Elaboración propia

**Tabla 23** Creación de empresa por insuficientes oportunidades  
Las insuficientes oportunidades en el trabajo habitual

	Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido Totalmente en desacuerdo	3	3.8	3.8	3.8
Parcialmente en desacuerdo	7	9.0	9.0	12.8
Indiferente	15	19.2	19.2	32.1
Parcialmente de acuerdo	17	21.8	21.8	53.8
Totalmente de acuerdo	36	46.2	46.2	100.0
Total	78	100.0	100.0	

Fuente: Elaboración propia

**Tabla 24** Creación de empresa por red de contactos  
La disponibilidad de una red de contactos en el mercado potencial

	Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido Parcialmente en desacuerdo	3	3.8	3.8	3.8
Indiferente	13	16.7	16.7	20.5
Parcialmente de acuerdo	23	29.5	29.5	50.0
Totalmente de acuerdo	39	50.0	50.0	100.0
Total	78	100.0	100.0	

Fuente: Elaboración propia

**Tabla 25** Creación de empresa por patrimonio para invertir  
La disponibilidad de un patrimonio para invertir

	Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido Totalmente en desacuerdo	1	1.3	1.3	1.3
Parcialmente en desacuerdo	3	3.8	3.8	5.1
Indiferente	13	16.7	16.7	21.8
Parcialmente de acuerdo	24	30.8	30.8	52.6
Totalmente de acuerdo	37	47.4	47.4	100.0
Total	78	100.0	100.0	

Fuente: Elaboración propia

**Tabla 26** Creación de empresa por disponibilidad de red de contactos en mercado potencial  
La disponibilidad de una red de contactos en el mercado potencial

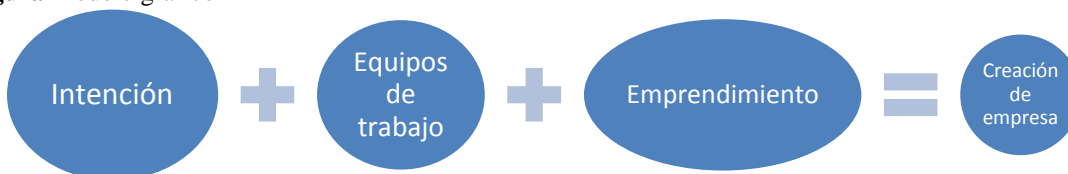
	Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido Parcialmente en desacuerdo	3	3.8	3.8	3.8
Indiferente	13	16.7	16.7	20.5
Parcialmente de acuerdo	23	29.5	29.5	50.0
Totalmente de acuerdo	39	50.0	50.0	100.0
Total	78	100.0	100.0	

Fuente: Elaboración propia

## 5.2. Recomendaciones

La creación de empresas con base Universitaria, como se puede ver en los datos previamente mostrados, es de interés general para el alumnado de esta institución, sin embargo las barreras existentes para el emprendimiento empresarial aún son muchas. Por una parte se tiene que librar el mayor obstáculo que se tiene en esta aventura, el cual es el miedo al fracaso. El miedo existente va más allá de la frustración propia, abarca presiones sociales hacia los emprendedores. Sin embargo se propone la utilización de equipos de trabajo para la creación de empresas. Estos equipos de trabajo fomentarían un grado mayor de confianza entre los participantes, eliminando así el miedo al fracaso hacia el emprendimiento empresarial. Así mismo la decisión final del giro a tomar, cualquiera que sea este, estará sustentado por un consenso del equipo, augurando un grado de éxito mayor.

**Figura** Modelo gráfico



Fuente: Elaboración propia

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## Anexo 1 Encuesta

de crear empresas en los programas de maestría . Esta encuesta será confidencial y anónima. De nueva cuenta muchas gracias por su apoyo.

### Generales

Edad \_\_\_\_\_ Tetramestre \_\_\_\_\_ Género \_\_\_\_\_ Empresarios en familia Sí No  
 Nombre de Maestría \_\_\_\_\_ Especialidad \_\_\_\_\_

**Instrucciones.-** Marca con una "x", lo que más se acerque a tus ideales. Siendo el número **1** "**Totalmente en desacuerdo**" y 5 "**Totalmente de acuerdo**". Le pedimos por favor no deja preguntas sin responder.

		Totalmente en desacuerdo					Totalmente de acuerdo				
<b>I. Intención</b>	Me interesaría crear una empresa en la maestría	1	2	3	4	5	1	2	3	4	5
	Me interesaría crear una empresa teniendo socios	1	2	3	4	5	1	2	3	4	5
	Me interesaría crear una empresa teniendo los recursos suficientes	1	2	3	4	5	1	2	3	4	5
	Me interesaría crear una empresa teniendo el giro de la misma	1	2	3	4	5	1	2	3	4	5
	Me interesaría crear una empresa pues he encontrado oportunidades en el extranjero	1	2	3	4	5	1	2	3	4	5
	Me interesaría crear una empresa terminado mis estudios de maestría	1	2	3	4	5	1	2	3	4	5
		<b>Totalmente en desacuerdo</b>					<b>Totalmente de acuerdo</b>				
<b>II. Emprendimiento</b>	Estoy constantemente en busca de nuevas maneras de mejorar mi vida	1	2	3	4	5	1	2	3	4	5
	Nada es más emocionante que lograr que mis ideas se conviertan en realidad	1	2	3	4	5	1	2	3	4	5
	No importa cuáles sean los riesgos, si creo en algo, trabajo para que ocurra	1	2	3	4	5	1	2	3	4	5
	Sobresalgo en la identificación de oportunidades	1	2	3	4	5	1	2	3	4	5
	Siempre estoy buscando mejores formas de hacer las cosas	1	2	3	4	5	1	2	3	4	5
	Soy capaz de convertir problemas en oportunidades	1	2	3	4	5	1	2	3	4	5
		<b>Totalmente en desacuerdo</b>					<b>Totalmente de acuerdo</b>				
<b>III. Trabajo en equipo</b>	Para mí, un beneficio de trabajar en equipo es que da a los miembros un sentido de propósito común	1	2	3	4	5	1	2	3	4	5
	Para mí, trabajar en equipo es mejor que el trabajo realizado individualmente	1	2	3	4	5	1	2	3	4	5
	Genero mayor cantidad de ideas o soluciones cuando trabajo en equipo que de manera individual	1	2	3	4	5	1	2	3	4	5
	En equipo, trabajo de manera efectiva y creativa	1	2	3	4	5	1	2	3	4	5
	individuales	1	2	3	4	5	1	2	3	4	5
	Cuando tengo un problema, trato de resolverlo tomando opiniones de otros	1	2	3	4	5	1	2	3	4	5
		<b>Totalmente en desacuerdo</b>					<b>Totalmente de acuerdo</b>				
<b>IV. Creación de la empresa</b>	<b>En las siguientes preguntas, responde con base a tus ideales de la razón de creación de una empresa:</b>										
	El deseo de probar la habilidad propia en la creación de una nueva empresa	1	2	3	4	5	1	2	3	4	5
	El ser independiente	1	2	3	4	5	1	2	3	4	5
	Las insuficientes oportunidades en el trabajo habitual	1	2	3	4	5	1	2	3	4	5
	La disponibilidad de un equipo de trabajo para la composición de la empresa	1	2	3	4	5	1	2	3	4	5
	La disponibilidad de un patrimonio para invertir	1	2	3	4	5	1	2	3	4	5
	La disponibilidad de una red de contactos en el mercado potencial	1	2	3	4	5	1	2	3	4	5

# El venado cola blanca y su diversificación industrial

JUAN ENRIQUE GONZALEZ ROCHA<sup>1</sup>  
*Universidad Tecnológica de Nuevo Laredo*  
*Nuevo Laredo, Tamaulipas, México*

*En el presente es ya prácticamente imposible que las empresas puedan sostenerse y crecer vendiendo un solo producto a los mismos clientes. Los empresarios, dados los cambios permanentes en el micro y macro entorno- están obligadas a buscar la complementariedad, a diversificar su producción y su clientela.. La Asociación Nacional de Ganaderos Diversificados Criadores de Fauna (ANGADI), que en los años recientes se ha visto obligada a transformar la oferta de uno de sus principales productos: el venado cola blanca, dada la caída en los últimos años (2008-2014) de su principal negocio y fuente de ingresos: el turismo cinegético. Para que pueda tener mayores probabilidades de éxito, se requiere de una investigación de mercado objetiva y profunda que ofrezca la mayor información que permita definir las más favorables actividades de marketing y las mejores oportunidades de venta. Y de un plan estratégico de negocios riguroso y holístico que defina claramente los lineamientos y las acciones a realizar en el corto, mediano y largo plazo.*

*PALABRAS CLAVE* Diversificación, Venado, Comercialización.

*At present it is practically impossible for companies to sustain and grow by selling one product to the same customers. Entrepreneurs, given the constant changes in the micro and macro environment, are forced to seek something similar to diversify their production and their customers. The National Cattlemen's Beef Association Breeders Diversified Fauna (ANGADI), which has in recent years been forced to transform one of its main products: white-tailed deer. This is due to the decline in recent years (2008-2014) of its main business and source of income: hunting tourism. To have a higher chance of success, they must perform an objective and thorough investigation on the most favorable marketing activities and the best sales opportunities. They must also create a rigorous, strategic and holistic business plan that clearly defines the guidelines and actions to be taken in the short, medium, and long term.*

*KEYWORDS* Diversification, Deer, Marketing

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<sup>1</sup> Address correspondence to Juan Enrique Gonzalez Rocha, Universidad Tecnológica de Nuevo Laredo, Nuevo Laredo, Tamaulipas, México. E-mail: [jegonzalez@utnuevolaredo.edu.mx](mailto:jegonzalez@utnuevolaredo.edu.mx)

## PROBLEMÁTICA

A partir del 2008, en el municipio de Nuevo Laredo y sus zonas colindantes (norte de Coahuila y Nuevo León), la situación de la crianza de venado cola blanca para fines cinegéticos se ha complicado profundamente. Si bien en fechas recientes se habló con optimismo de un repunte en la última temporada de caza (diciembre de 2014 – febrero de 2015), lo cierto es que los ranchos asociados de ANGADI están muy lejos de aquellos años de bonanza en el que el negocio de la cacería era sumamente exitoso y lucrativo para empresarios y trabajadores del ramo y, están muy lejos de poder sobrevivir y resolver sus problemas económicos y financieros mediante un solo tipo de negocio: el turismo cinegético. La afluencia de turistas cazadores nacionales y extranjeros a la región ya no es la misma, esta ha disminuido drásticamente en los últimos años convirtiendo para muchos involucrados, un negocio antes millonario en un negocio de subsistencia, quebrantando la zona de confort de los empresarios del ramo obligándolos a buscar nuevas alternativas y nuevas oportunidades de negocio de este producto para mejorar su situación y salir de su estancamiento.

Desde el 2008 y hasta la fecha, temporada tras temporada, el turismo cinegético en la región noreste se muestra escaso y con una clara tendencia hacia la baja, generando pérdidas cuantiosas a los empresarios ganaderos dedicados a este negocio. Las pérdidas son tantas que muchos se han visto en la necesidad de cerrar sus ranchos permanentemente ante el hecho de no recibir ni un solo turista en sus tierras. Sin importar, por el momento, que las causas de ello puedan ser la sequía de los últimos años; la delincuencia organizada e inseguridad en la región; La propaganda del gobierno estadounidense en contra de visitar México entre sus ciudadanos; los cambios a la ley en el país respecto a la cacería; el cambio cultural presente que cuestiona si en verdad la cacería es un deporte o simplemente se trata de una realidad en la que injustificadamente se sacrifica la vida de especies animales sin más propósito que el de satisfacer el placer y el gusto de los cazadores o a la oferta de nuevos deportes y practicas recreativas; lo cierto es que no se ve ninguna solución al respecto. Por lo que esta situación de precariedad y de pérdidas millonarias ha conducido a los asociados de ANGADI, a la conclusión de que vivir y crecer única y exclusivamente del negocio del turismo cinegético resulta hoy en día prácticamente imposible, y que es necesario diversificar y ampliar la oferta del venado cola blanca si se quiere permanecer en el mercado.

## ANTECEDENTE

Según datos de la secretaria de turismo para la temporada 2001-2002 la derrama total del mercado de turismo cinegético en México se estima en un orden de magnitud de entre 140 y 155 millones de dólares. La derrama del turismo cinegético doméstico representa de 79.5 a 88.6 millones de dólares, representando alrededor del 57% y para el turismo cinegético internacional de 60.5 a 66.4 millones con una participación del 43%.

Esta derrama es marginal en el ingreso por concepto de turismo del país representando entre el 0.15% y el 0.17% del ingreso doméstico y del 0.9% y el 1.0% del internacional.

Total del turismo en México (2001)

Concepto	Doméstico Millones \$US	Extranjero Millones \$US
Derrama total por turismo	53,000	6,538
Derrama total turismo cinegético	79.5 - 88.6	60.5 - 66.4
Participación del turismo cinegético	0.15% - 0.17 %	0.9% - 1.0 %

Fuente: Derrama Total Turismo Doméstico; INEGI/SECTUR  
Derrama Total Turismo Internacional Banco de México  
Derrama Turismo Cinegético: Estimación Redes Consultores

### CARACTERÍSTICAS DE LA PROBLEMÁTICA ACTUAL

Esta situación al parecer se mantiene constante ya que según datos del 2015: La cacería deportiva o turismo cinegético generó en 2014-2015 ingresos estimados en 163 millones de dólares (mdd), representando el 1% del total de la industria turística con un crecimiento del 8.8% anual. Sin embargo, no son todos ni los mismos actores los que se están beneficiando de ello, como lo podemos apreciar en Nuevo Laredo, Coahuila y Nuevo León en donde no son pocos los rancheros que se han visto afectados por una clara tendencia a la baja del turismo cinegético en la región.

Por ejemplo, el titular de la ventanilla única de la Secretaría del Medio Ambiente para esta Región Norte, Juan Guadalupe Garza Menchaca (2015), explicó que las nuevas obligaciones en nuestro país y las alertas en los Estados Unidos siguen siendo la causa principal para que no se recupere el turismo cinegético, en la región de Coahuila. Los turistas cinegéticos se han desanimado debido a la nueva reglamentación en el país, que les obliga a registrar su equipo de caza y a recogerlo cuando van a salir de México. Obviamente que esta medida se contrapone a la segunda enmienda de la Constitución de los Estados Unidos de Norteamérica, por el derecho de tener, poseer y portar armas. Garza Menchaca destacó el hecho de que se trata de armas deportivas las que internan los turistas cinegéticos, quienes cumplen con todos los requisitos. Con estas acciones la recuperación del turismo se complica más, pese a las promociones que los organizadores cinegéticos realizan durante el año.

Y esta misma situación de crisis del turismo cinegético en la frontera norte del país, sea por estas razones u otras más, también se vive de modo dramático en el municipio de Nuevo Laredo Tamaulipas, de tal modo que desde el 2012, los propietarios de predios particulares, ejidos y terrenos comunales, dedicados a la conservación, manejo y aprovechamiento sustentable de los recursos de la flora y la fauna silvestre que se desarrolla y produce en sus tierras así como las personas interesadas en conocer y participar en lo que se refiere a Ganadería diversificada, congregados en la ANGADI, y que en particular, las que se dedican a la industria del turismo a través de la crianza y comercialización cinegética del venado cola blanca y de otras especies silvestres, externaron la necesidad de ir más allá de esta forma particular de comercio y de comenzar a desarrollar estrategias para diversificar la producción y comercialización de este producto.

A través del entonces presidente de esta asociación, el Sr. Gabriel Rubén Serna Aguilar y como parte de esa estrategia, se dió inicio a un acercamiento con algunas de las universidades de la zona. Aproximación que más recientemente ha comenzado a ocurrir también con la Universidad

Tecnológica de Nuevo Laredo, para establecer convenios de colaboración que contribuyeran al estudio y análisis de cuáles pudieran ser las mejores alternativas para ofertar y vender la variada gama de productos que se pueden obtener del venado cola blanca.

Pero de toda la gama de productos a ofertar, el más importante es el de la carne de venado, particularmente la de las hembras, ya que en la actualidad se empieza a sentir en la región una tendencia a la sobrepoblación de dicha especie y, por otra parte, todo aquel que se dedica a su crianza con fines cinegéticos; sabe que las mejores y más codiciadas piezas de cacería de esta especie son los machos con sus poderosas cornamentas o astas que en algunos ejemplares llegan a mediar más de 60 cm de largo.

Sin embargo, la comercialización de la carne de venado cola blanca no es algo fácil, no es algo que este dentro de las prioridades de los consumidores nacionales y extranjeros, o que forme parte de los productos de la canasta básica y que, por lo tanto pueda ser incluido de manera sencilla dentro del Índice de Precios al Consumidor (IPC) de México o de cualquier otro país del mundo. Se trata más bien de un producto de lujo, caro en su producción y crianza, pero, más costoso en su venta dada su principal naturaleza comercial: ser un producto para la cacería y por lo tanto de alto precio. Simplemente, en promedio, cada cazador paga alrededor de 1,500 dólares por el permiso de entrada a un rancho cinegético y paga un mínimo de 3,500.00 dólares por un ejemplar de venado cola blanca macho cazado.

En mayo del 2012 a través de su presidente nacional, Sr. Gabriel Serna Aguilar, ANGADI hizo manifiesta su idea de comercializar la carne de venado cola blanca en esta frontera y en el interior del país en productos como carne seca, cruda y embutidos; iniciando con un plan piloto desarrollado “en la Feria de San Marcos, para determinar la respuesta de los consumidores de este producto”. En ese tiempo, Serna comentó “que para octubre del 2012, se comenzarían a producir de forma regular los productos elaborados con la carne de dicho animal, agregando que aún no se tenía con precisión el precio de la carne en el mercado, pero se tenía un estimado de un peso por gramo”.

La idea desde entonces era la diversificación del producto e ir más allá de la carne seca generando suficiente carne cruda y fresca para restaurantes de zonas turísticas, sobre todo para el consumo de visitantes europeos y consumidores locales del interior del país que degusten y disfruten de este producto, en diversas presentaciones y platillos típicos mexicanos: chile colorado, tamales, salpicón de venado o bien empacarse al vacío para enviarse a restaurantes de alta cocina y hacer embutidos como jamón, chorizo o cecina.

Añadiendo que del venado se puede aprovechar además de la carne la piel y las astas: “cada año los venados mudan de astas y de éstas se pueden fabricar candiles y lámparas”, entre otras cosas artesanales y artísticas.

Se proponía iniciar con un estudio de mercado para establecer precios competitivos y que la carne de venado pudiera cumplir con el objetivo de ser consumida por un público mayor; ya que el producto, como ya se dijo anteriormente: “el producto en sí es caro; por su crianza y debido a la forma en que se sacrifica al animal; así como por su naturaleza silvestre y a su manejo complicado en cuanto a la mano de obra e infraestructura especializada que se requiere”. En ese

entonces se calculó que en una primera etapa se sacrificarían alrededor de unos tres mil a cinco mil venados hembra de la región.

Por otro lado, en ese mismo año (2012), Gabriel Serna, habló sobre la búsqueda de establecer convenios con tres instituciones académicas de la región, dos nacionales y una extranjera, para llevar a cabo estudios que den sustentabilidad a las bases para el aprovechamiento del venado cola blanca. Esto como resultado, según Serna, de la buena aceptación de la carne de venado en la feria de San Marcos de Aguascalientes. En ese entonces Serna planteó que el 31 de mayo se reunirían con dos universidades de Tamaulipas y con Texas A&M; así como con gente del Gobierno del Estado, para establecer los fundamentos y la justificación para la elaboración de un proyecto y lograr una producción estable de carne de venado.

Se recurriría a las universidades para que realizarán el estudio necesario con el propósito principal de que los productores encontraran el mercado adecuado para el máximo aprovechamiento del venado cola blanca. Pero, lo más importante, para cuidar a la población de esta especie. El propósito no solo era -y sigue siendo- la generación de ingresos, sino también la generación de empleos, así como la dispersión y derrama económica para el campo y para la ciudad para que las personas que tuvieran el perfil para “poder aprovechar o poder procesar la carne o las pieles del venado” obtuvieran beneficios. En otros términos se comenzaron a idear y desarrollar las bases para el estudio de factibilidad, la investigación de mercado y las estrategias de mercadotecnia para la diversificación del producto y de su comercialización.

A finales de agosto de ese año se presentaron nuevas declaraciones, en donde se advierte que ya se tiene programado surtir algunos pedidos de carne de venado cola blanca para el mes de octubre y que se espera tener más detalles de cómo se va a comercializar la carne y para mandarlos a la Cd. de México o Guadalajara dependiendo de dónde se les esté pidiendo; en cuanto al precio se estableció comercializar el kilo de carne de venado cola blanca en 90 pesos, aunque aún no es el precio definitivo.

Para septiembre del 2012, se aportaba el dato de que en relación a la temporada anterior (dic 2010-enero del 2011), una disminución drástica de hasta el 50 por ciento del turismo cinegético en los estados de Tamaulipas, Nuevo León y Coahuila, representando una pérdida cuantiosa para los ganaderos de la región noreste de México y que se daría a conocer en la Exposición Nacional de Ganaderos y de la Industria Pecuaria, organizada por la Secretaria de Agricultura. El aprovechamiento de la carne del venado cola blanca texano, para que los ganaderos quienes han tenido grandes pérdidas con las sequias muestren como se producen los alimentos del ganado y amplíen y diversifiquen las formas de obtener beneficios.

Se propuso para ese evento, una exposición para que al público en general se le diera a conocer: que la cacería también es una actividad de donde el campo obtiene ingresos, de donde la gente vive y de donde se puede conservar la naturaleza, el medio ambiente y contribuir a que se detenga el cambio climático que tanto afecta. Con la finalidad de llevar a la gente normal de la ciudad, información y dar a conocer de primera mano cómo se producen realmente los alimentos en México, principalmente los que provienen del ganado, ya sea vacuno, ovino o caprino; ya que en ese evento se presenta un público de todo tipo, y además del público en general, ofrecerle a

estudiantes universitarios, preparatorianos, de secundarias, primarias y pre-primarias visitas guiadas para el conocimiento de su crianza.

Además, se planteó realizar degustaciones en algunas escuelas de chefs y restaurantes para comenzar a comercializar la carne de venado cola blanca y “eliminar la sobrepoblación de venaditas”. Promover la carne de vida silvestre en empresas y restaurantes especializados en comida natural u orgánica y lograr a través de Sagarpa y de Semarnat, hacer contacto con ese tipo de negocios, es decir, con un nicho de mercado que valore y aprecie este tipo de producto y que le pueda dar salida al excedente de animales que se tiene, y evitar problemas a futuro. En esta lógica, a finales de octubre 2012, ANGADI organizó un evento en la capital de México en el que invitaron a diversos restauranteros para una demostración gastronómica de platillos regionales con carne de venado:

“Una escuela de chefs de Aguascalientes nos hizo el honor de prepararnos algunos platillos que fueron del gusto de los comensales y esperamos que en poco tiempo estemos con un producto nuevo en el mercado que nos identifique a la región Nuevo Laredo, como el noreste de México con esta fuente de materia prima para restaurantes” Gabriel Serna

Y finalmente se planteó que la venta de la carne de venado, sería solamente por temporada, en específico, posterior a la temporada de caza o a la par con ella, en conformidad con los planes sustentables y de responsabilidad social del manejo de la especie y que por año se podrían aprovechar hasta 20 mil venados.

Por su parte, en noviembre del 2012, la Asociación Ganadera expuso que daría su apoyo al proyecto de la ANGADI: de vender carne de venado para la alta cocina en el interior del país, mientras que Serna externó, que para diciembre de ese año, se enviarían los primeros canales de carne de esa especie a varios locales del centro de México, y con ello iniciar con la cristalización de un proyecto en el cual se tienen grandes expectativas y que ha ocupado grandes esfuerzos por parte de diferentes organismos y niveles de gobierno. Pero, lo que no se había previsto es que las leyes mexicanas prohíben la comercialización y venta industrial de la carne de venado; así como también prohíbe su exportación a cualquier parte del mundo, lo cual ha generado un impedimento para su comercialización tanto al interior del país como del extranjero.

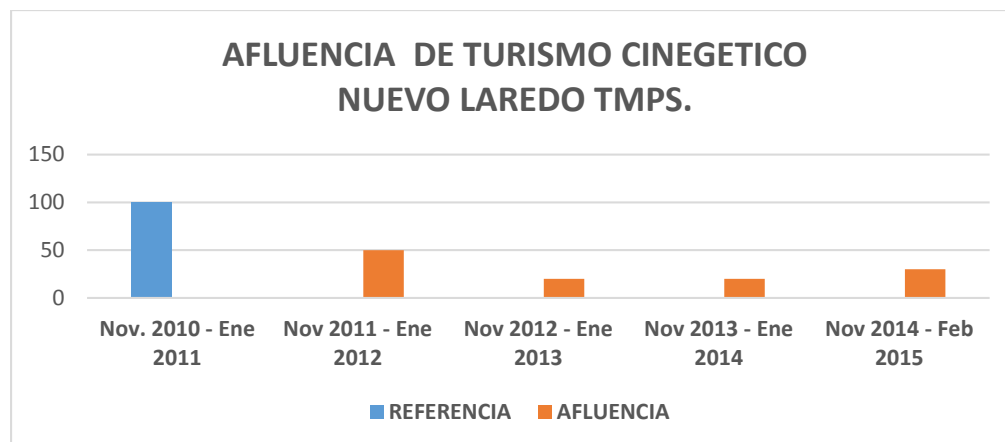
Para noviembre del 2013, Serna admitió que se presentaron retrasos tanto en el proyecto de comercializar la carne de venado a nivel industrial, como en el plan de lanzamiento del producto debido a que, según él, se pretendió garantizar la calidad óptima del producto para el consumo humano, y que con ese propósito se trabajó durante ese periodo de tiempo en las certificaciones y en la capacitación para dicha operación, colaborando estrechamente con el Servicio Nacional de Sanidad Inocuidad y Calidad Agroalimentaria (SENASICA), Como una ventaja competitiva, externó que el hecho de que los ejemplares se desarrollen en un ambiente natural los hace particularmente apreciados en el mercado de productos orgánicos, por su alta proporción proteínica.

Por último mencionó que en sitios en donde la industria gastronómica es muy dinámica, como es el caso de Cancún, se importa carne de ciervo rojo para elaborar platillos mexicanos que originalmente tienen como base al venado: “en lugar de adquirir carne de venado cola blanca mexicano, se está importando venado europeo”. Eso indica, según Serna, que hay un importante mercado: que es el que se desea atender, y aunque no aventuro fecha alguna para dar inicio a su comercialización en masa.

Gerardo Serna Aguilar, actual presidente de ANGADI, mencionó que durante el mes de noviembre del 2014, se sostuvieron reuniones con diversas autoridades de sanidad y protección a la flora y fauna para que les autorizara la venta legal de este producto. De hecho se viajó a España y en el mes de octubre de ese año se mantuvieron pláticas con SAGARPA, con la Academia, Sanasica, del Consejo Técnico de Sanidad animal, para hacer la propuesta a Sanasica. De la plática con el presidente de dicho organismo se obtuvo la respuesta de que sí se aceptará la propuesta y que se hará la promoción correspondiente ante la Cofedem.

El número de hembras que se disponen para su comercialización depende de los dueños de los criaderos, pero se asegura que existe un gran potencial de venados que de concretarse el proyecto, se podrían crear micro industrias autosuficientes que generen nuevos empleos y dejen una importante derrama económica en la región. En esto consiste el aprovechamiento sustentable, pues en la región, el venado cola blanca es un recurso renovable que se puede garantizar su reproducción en un ambiente dinámico de actividad económica y social. Finalmente, puntualizó Serna Aguilar que en México, no puede ser comercializada la carne de venado cola blanca, ya que es ilegal, aunque ya existen en el sur del país diversas empresas que han logrado los permisos y autorizaciones que los acreditan para poder vender el producto.

Como podemos observar, la problemática a la que se enfrenta ANGADI, es compleja, y obedece a una multiplicidad de factores que han contribuido en ello: Las sequías de los últimos años, la delincuencia e inseguridad en la región, la caída dramática del turismo cinegético como consecuencia de esa misma inseguridad e inestabilidad regional y por último las leyes y normas oficiales que hasta el momento han impedido otras formas de comercializar el producto, como es la venta de su carne y de su piel o la comercialización de las ornamentas o astas, etc. Veamos gráficamente, por ejemplo, el desplome del turismo cinegético como consecuencia de la inseguridad.





Ya se había registrado un primer desplome serio del turismo cinegético en la región entre los años del 2007 al 2010, hasta el punto de que el 2007 fue considerado como el último año bueno para el turismo cinegético, dándose la debacle en 2008 con la primera pérdida de grupos de cazadores en la región noreste de México. En el 2009 se tuvo una baja estimada en un cincuenta por ciento y en 2010, en un estudio comparativo con el año anterior, se estuvo trabajando con una cuarta parte de turistas cinegéticos. En otros términos en el 2010 en comparación con el 2007, se estuvo trabajando con un ochenta por ciento menos del flujo de turistas cinegéticos registrados en cotos de caza. Tomando como año base el 2010, en la gráfica observamos que del 2011 al 2015 el desplome del turismo cinegético ha sido persistente y es poco probable que esta tendencia a la baja cambie en el corto plazo, aunque este 2015, aparentemente se presentó un leve repunte, el cual probablemente puede tratarse de cifras maquilladas para fines políticos y propagandísticos del actual gobierno municipal. Así que tomando como base el 2007 el desplome del turismo cinegético para el 2015 rebasa más del cien por ciento.

### METODOLOGÍA DE LA INVESTIGACIÓN

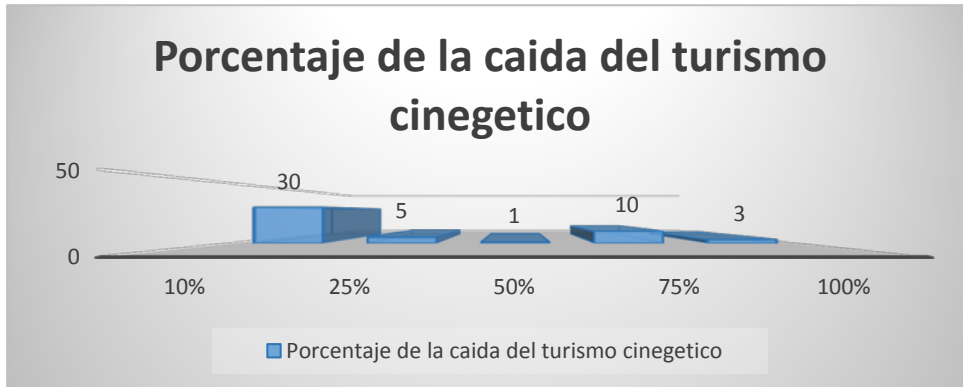
El método empleado fue el método mixto, ya que se realizaron tanto investigaciones cualitativas como cuantitativas. Los instrumentos fueron para lo cualitativo la entrevista no estructurada, y para el cuantitativo el cuestionario encuesta. Se llevaron a cabo una serie de pláticas relativamente informales directamente con el presidente de ANGADI y con su hermano, que fueron los encargados en platicarnos gran parte de lo que sucede en el momento en lo que respecta al sector turístico cinegético en la región y respecto a los cambios que se están promoviendo para diversificar la industria del venado cola blanca.

También se aplicó una breve encuesta en donde se les hicieron a una muestra de ganaderos de la región, seleccionamos 3 de preguntas básicas de 5 para entender el problema de la cual concluimos las siguientes respuestas.

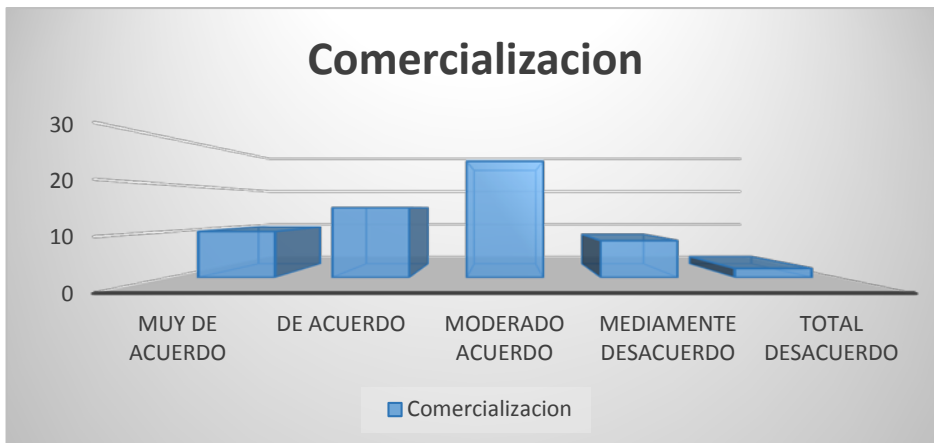
1. ¿Cómo han sido su situación económica en las últimas temporadas?



2. ¿Qué porcentaje considera Ud. que ha disminuido el turismo cinegético en su rancho?



3. ¿Está usted de acuerdo en que se comercialice la carne del venado cola blanca al interior del país y en el extranjero?



4. ¿Qué factor piensas que es el que más ha influenciado en la caída del turismo cinegético en la región?



## CONCLUSIÓN

De este modo indiscutiblemente uno de los problema más urgentes a tratar es el de la inseguridad, y el de devolverle la confianza a los cazadores nacionales y extranjeros para que regresen a la zona en las temporadas de caza, pues de hecho ha sido la consecuencia de que en los ganaderos de la región naciera la necesidad de diversificar el producto ante las fuertes pérdidas de los últimos años; así como la razón de las fuertes y costosas campañas publicitarias que se han tenido que implementar por parte del gobierno y de la asociación empresarial para recuperar la confianza de los cazadores.

Si bien son trascendentes realizar un estudio de factibilidad, una investigación de mercado, un plan de negocios o una estrategia de mercadotecnia para garantizar la comercialización y venta del producto diversificado o de conseguir clientes o nichos de mercado nacionales y extranjeros para una pronta comercialización exitosa, resulta prioritario obtener los permisos y certificaciones necesarias y suficientes que hagan legalmente factible y que legitimen la mercantilización de este producto, tanto al interior de México, como en el plano internacional.

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# **Impacto en la cultura en los negocios internacionales, un énfasis de los negocios en México**

LIC. MARIO ALBERTO VILLARREAL ALVAREZ<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

DR. FERNANDO HERNÁNDEZ CONTRERAS  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*En esta investigación se estudia cómo influye en las negociaciones internacionales, las diferencias culturales, que es una negociación internacional, como es el proceso de negociación en ciudades fronterizas, y finalmente como se analiza la manera de hacer negocios con los mexicanos, las ventajas, los beneficios y el por qué invertir en México. Se concluye con los aspectos más importantes que se tienen que considerar si a un inversionista extranjero le interesa incursionar en las negociaciones con los empresarios mexicanos, ya que en el aspecto de exportación de su productos e inclusive en la instalación de una fábrica o representación de la marca en un país extranjero.*

**PALABRAS CLAVE** *Cultura, negocios internacionales, comercio internacional, globalización y organización social.*

*This research examines how international negotiations are influenced, cultural differences, what an international negotiation is, how the negotiation process works in border cities, and finally how to analyze the way of doing business with Mexicans: the advantages, the benefits, and why to invest in Mexico. We conclude with the most important aspects that must be taken into consideration if a foreign investor is interested in venturing into negotiations with Mexican businesses, such as the exportation of their products, the establishment of a factory, or the representation of the brand in a foreign country.*

**KEYWORDS** *Culture, international business, international trade, globalization and social*

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<sup>1</sup> Address correspondence to Lic. Mario Alberto Villarreal Alvarez, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. E-mail: [valvarez@uat.edu.mx](mailto:valvarez@uat.edu.mx)

# Marketing Digital

ING. CLAUDIA SOLIS GORDILLO<sup>1</sup>  
Universidad Tecnológica de Nuevo Laredo  
Nuevo Laredo, Tamaulipas, México

*Es una herramienta fundamental para incrementar la rentabilidad a la empresa y hacerla altamente competitiva.*

*Hoy en día el internet es un instrumento que se tiene que saber utilizar de una forma adecuada.*

*El inicio del marketing electrónico, en los años 80 da el paso al prosumidor la era de una especie de consumidor activo. , el cual no se limitaba a recibir publicidad o a consumir un producto, si no que era más proactivo y no solo deseaba la mayor personalización, a medida de los años 1990 el prosumidor haría su aparición en el internet.*

*Actualmente la evolución natural de marketing digital fue que se dejó de vender productos si no que vender experiencia, donde actualmente cada sitio web, o página web de una empresa genera sus propios códigos y genera una publicidad directa, el internet es un camino diario, nuevo donde hay que alimentar para tener una vigencia en el medio electrónico, porque sin vigencia deba siempre determinarse una buena aplicación de estrategias de marketing, como las redes sociales.*

*Donde el cambio viene hacer que el mercado ya no es una localidad estática, ni si quiera un estado ni un país entero, viene siendo una navegación concreta especifica en el mundo en general.*

*En conclusión el marketing electrónico consiste en utilizar todo el potencial interactivo de la internet, en la comunicación con el mercado objetivo, donde la fuerte competencia y la rivalidad entre la miles de empresas generadas, obliga a estar al día a la empresa o mejorar la estrategia de venta, el compromiso con el cliente al final de esta, donde englobamos la clasificación del producto, los atributos de la mercancía, las características, la marca del producto, precio, empaque, presentación, ciclo de vida, relaciones públicas y por ultimo hacer notar el servicio al cliente, nuestro consumidor final.*

**PALABRAS CLAVE**      *Marketing electrónico, consumidor y servicio al cliente.*

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<sup>1</sup> Address correspondence to Ing. Claudia Solis Gordillo, Universidad Tecnológica de Nuevo Laredo, Nuevo Laredo, Tamaulipas, México. E-mail: [csolis@utnuevolaredo.edu.mx](mailto:csolis@utnuevolaredo.edu.mx)

## Digital Marketing

*It is a fundamental tool to increase the profitability of the company and make it highly competitive.*

*Nowadays the internet is an instrument, which one has to know how to use in an appropriate manner.*

*The beginning of e-marketing in the 80s gave way to the prosumer: the era of a kind of active consumer, which was not limited to receive advertising or consume a product, but was more proactive and not only wished for the greatest customization. By the 1990s the prosumer would make his appearance on the internet.*

*Currently the natural evolution of digital marketing is that it stopped selling products in order to sell experience, where currently each business website or webpage creates their own codes and creates direct advertising. The internet is a new, daily journey where one must feed to have a validity in the electronic medium because without validity, one must always determine a good application of marketing strategies like social networks.*

*Where the change is to make the market no longer a static location nor a state nor a whole country, it ends up being a specific concrete navigation in the general world.*

*In conclusion, e-marketing consists in utilizing all the interactive potential of the internet, and the communication with the objective marketing, where the strong competition and rivalry between the millions of generated companies obligates the company to be up to date or improve the sales strategy, the commitment with the client at the end of it where we include the product's classification, the merchandise's attributes, characteristics, the product's brand, price, packing, presentation, life cycle, public relations, and finally make note of the customer service, our final consumer.*

## **La PYME industrial en Tamaulipas: su participación en la Cuenca de Burgos**

DR. VÍCTOR MANUEL RUBALCAVA DOMÍNGUEZ<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

DR. FERNANDO HERNÁNDEZ CONTRERAS  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

MTRA. MA. DE JESÚS BARRÓN PONCE DE LEÓN  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

MTRA. NORA LIZBETH FUENTES GARCÍA  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*La Pequeña y Mediana Empresa (PYME) mexicana, visualizada como eslabón preponderante por su sobrevivencia y empuje económico, soporta los embates de los grandes consorcios. La PYME industrial a través de la generación de productos terminados y en proceso, anualmente obtiene importantes indicadores en generación de empleos e inversión, aportando avances considerables para la economía del país. Sin embargo, en los últimos años, diversas investigaciones demuestran carencias al interior de este tipo de empresas.*

*Resulta imprescindible con el proyecto de la Cuenca de Burgos promulgado a finales del 2013, el apoyo que las instituciones públicas y privadas puedan dar a este sector productivo, que se traduzca en un repunte empresarial para este estrato.*

*Para lograr la integración de las empresas que coincidan con dicho plan, es preciso profundizar en el conocimiento respecto a las actividades de perforación, extracción y explotación de hidrocarburos que involucren a la PYME industrial en Tamaulipas y que coincidan geográficamente con la Cuenca.*

*Este estudio se realiza en el Estado de Tamaulipas mediante una metodología descriptiva, que nos permitirá conocer los recursos con que se disponen para hacer frente a este reto.*

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<sup>1</sup> Address correspondence to Dr. Víctor Manuel Rubalcava Domínguez, Profesor investigador del área de Micro, Pequeña y Mediana Empresa (MIPYME), Facultad de Comercio y Administración de Tampico, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. E-mail: [vrubalca@docentes.uat.edu.mx](mailto:vrubalca@docentes.uat.edu.mx)



## **Competitividad: PYMES planeación estratégica y las tecnologías de la información**

ISC. MA. ELENA GÁMEZ VILLALOBOS<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*Las PYMES representan el 95,2% de los 5 millones de empresas contabilizadas por el INEGI, generando el 52% del producto interno bruto y el 72% de empleos (INEGI, 2011), Pro México informa que el 65% de esas PYMES son de carácter familiar y que ese factor juega un papel importante dentro del proceso de formación, ya que limita el acceso a los créditos (federal, 2016). Aquí es donde la Planeación Estratégica juega un papel importante, ya que mediante sus tres etapas: Formulación, Implementación y Evaluación de Estrategias, establecen claramente el objetivo del negocio, hacia donde quieren llegar y mediante que herramientas, como la tecnologías de la información pueden lograr la competitividad y mantenerse en el mercado (David, 2013). Las tecnologías de la información en las PYMES juegan un papel muy importante para su competitividad, al sistematizar procesos, disminuir errores humanos y optimizar tiempo. (Cohen, 2009). Esta investigación para solucionar la citada problemática propone publicitar y facilitar mediante talleres la Administración Estratégica, por parte del gobierno federal en convenios con universidades y empresas de clase mundial.*

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<sup>1</sup> Address correspondence to ISC. Ma. Elena Gámez Villalobos, Posgrado de la UAT, Maestría en Administración de Negocios, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México.  
Email: [elena.gamez@palosgarza.com](mailto:elena.gamez@palosgarza.com)

# **E-Commerce y TICs: un modelo efectivo para el desarrollo de las PyMEs en México**

MARIA DE LOS ANGELES ROMERO LOPEZ<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*El comercio electrónico es una forma de negocio que utiliza la tecnología para promover y vender productos a escala local, nacional e internacional, (Gariboldi, 1999) facilita a los usuarios a adquirir productos o servicios desde cualquier lugar, siempre y cuando cuenten con acceso a internet. El comercio electrónico y las TICs (Tecnologías de la información) son herramientas que han surgido mediante un gran avance tecnológico y las cuales han favorecido el progreso de las Pymes (Pequeñas y Medianas Empresas) en México. Existen diferentes tipos de clasificación para la actividad económica digital, el B2B (Business to Business) el comercio de empresa a empresa se trata de intercambio de productos o servicios entre las mismas empresas. El B2C (Business to consumer) comercio de empresa al consumidor, modelo de negocio donde no existen intermediarios entre vendedor y el consumidor final y por el B2G (Business to Government) modelo que optimizan los procesos de negociación entre las empresas mediante el uso del internet. (OMC, 2013). La presente Investigación responde a la problemática que enfrentan las pequeñas empresas en México en su desarrollo e impacto social y propone un modelo basado en el comercio electrónico y las Tecnologías de la información.*

*El acelerado desarrollo de las TICs y su implementación en las empresas, está generando continuamente nuevos negocios y mercados vinculados con la innovación y el proceso del comercio electrónico. Además de mejorar la accesibilidad entre los usuarios gracias a la eliminación de barreras geográficas, lo cual provoca que el desarrollo de las empresas mexicanas que participa en el E-commerce sean cada vez más (Fernandez, 2015).*

*En los países de América Latina y en México las pymes conforman la mayor parte del movimiento empresarial, debido a la importancia de este sector, se necesita promover la realización de trabajos que analicen y determinen el impacto que tiene en la competitividad, lo cual depende de la productividad, la participación en el mercado interno y externo y la rentabilidad de la misma (Saavedra, 2012).*

*El propósito de esta investigación pretende desarrollar un modelo de prácticas innovadoras que sirvan de instrumento a las Pymes y de este modo permitirles alcanzar sus objetivos y ampliar su mercado mediante la comercialización electrónica. De la misma manera apoyarlas para que sigan siendo competitivas y así permita que se inserten en el proceso de globalización y cambio tecnológico para beneficio del país. (Naciones Unidas-CEPAL 2001)*

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<sup>1</sup> Address correspondence to Maria de los Angeles Romero Lopez, Division de Estudios de Posgrado e Investigación, Facultad de Comercio, Administración y Ciencias Sociales de Nuevo Laredo, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. Email: [romerolopez19@gmail.com](mailto:romerolopez19@gmail.com)

# **PYMES en México: implementación de un modelo competitivo y sustentable**

ING. WLISTER VALENZUELA ROSALES<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

GUILLERMO CORTES SANCHEZ  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*La importancia de las PYMES en la economía y generación de empleos es significativa tanto en México como en otros países. Internacionalmente estas empresas representan el 90% de las unidades económicas (INEGI, 2011). Tan solo en México representan el 94% de las empresas constituidas (Censos Económicos 2014 pg14). Así mismo PYMES emplean en México al 78.5% de la fuerza laboral así como el 52% del PIB (Tapia, 2012). Diversos problemas limitan su existencia y sustentabilidad: la falta de metodologías, créditos adecuados, herramientas de mejora entre otros. (BANXICO, 2015). Esta investigación propone un modelo competitivo y sustentable integrado por herramientas, metodologías de mejora continua entre otras, implementado y seguido por organismos gubernamentales además de créditos adecuados, ayudaran a las PYMES a subsistir por mayor tiempo.*

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<sup>1</sup> Address correspondence to Ing. Wlister Valenzuela Rosales, Division de Estudios de Posgrado e Investigación, Facultad de Comercio, Administración y Ciencias Sociales de Nuevo Laredo, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. E-mail: [Wlister.Valenzuela@Emerson.com](mailto:Wlister.Valenzuela@Emerson.com)

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## INTRODUCCION

Esta investigación tiene como objetivo desarrollar un modelo competitivo y sustentable que pueda ser implementado en las PYMES de México para mejorar su promedio de vida operativa y con esto ayudar a la generación de empleos y desarrollo económico del País.

La investigación utiliza la siguiente metodología:

### Antecedentes:

Las pequeñas y medianas empresas (PYMES) han sido por muchos años parte muy importante de la economía de un País, así como en la generación de empleos. Este tipo de empresas representan a nivel mundial un sector económico que ocupa a un gran número de personas y que además aporta un gran número de unidades económicas. Es por ello la importancia que tienen estas empresas y pero sobre todo la necesidad de apoyo para fortalecer su desarrollo. En México en 1978 se creó el programa de Apoyo a la industria Mediana y Pequeña (PAI), el programa se enfocó en las empresas que empleaban entre 6 y 250 personas. En 1985 la Secretaría de Comercio y Fomento Industrial (SECOFI), actualmente Secretaria de Economía (SE) definió los criterios a evaluar para la clasificación de las empresas según su tamaño. (INEGI, 2011, p. 11)

### Planteamiento del Problema:

La problemática de las PYMES en la mayoría de los países es la subsistencia, ya que no pueden competir con grandes empresas y esto las lleva a la quiebra. La falta de metodologías, sistemas, herramientas de mejora, entre otros, además de los recursos económicos, que ayuden a estas empresas a ser competitivas (BANXICO, 2015, p. 115), conllevan a que las PYMES en México solo tengan un promedio de vida de 2 años (BANXICO, 2015, p. 18)

### Hipótesis:

La implementación de un modelo competitivo y sustentable así como de metodologías de mejora continua que ayuden a las PYMES a mantener información sobres sus comportamientos crediticios, datos de resultados y balances validados que redunde en mayores opciones de crédito o mayor capacidad de negociación solucionarían el problema. Así mismo los cambios tecnológicos y la reforma financiera pueden ayudar a las PYMES a ser competitivas (BANXICO, 2015, p. 12).

### Preguntas de Investigación:

1. ¿Qué elementos tienen las PYMES competitivas?
2. ¿Cuáles son las principales características de las empresas competitivas?
3. ¿Cómo se mide la competitividad de las PYMES?
4. ¿Cuáles son los factores determinantes para para que una empresa sea competitiva?
5. Que elementos tienen las PYMES sustentables?

6. ¿Cuáles son las características de las PYMES sustentables?
7. ¿Cómo se mide la sustentabilidad de las PYMES?
8. ¿Cuáles son los factores determinantes para para que una empresa sea sustentable?
9. ¿Cuáles son las restricciones de los programas el apoyo a las PYMES?
10. ¿Cuál es la razón por la que las PYMES dejan de operar?
  - a. ¿Es por sectores geográficos?
  - b. ¿Es por tipos de negocios?
11. ¿Cuáles son las limitantes para que las PYMES puedan exportar sus productos a otros países?
12. ¿En qué consisten los apoyos municipales, estatales y federales a las PYMES?
13. ¿Cuáles son los principales obstáculos a los que se enfrentan las PYMES?

#### Metodología:

En esta investigación se hará un análisis bibliográfico para conocer las opiniones de expertos y poder determinar las principales metodologías implementadas en las empresas que las hacen competitivas y sustentables que nos ayuden a determinar cuáles de estas metodologías pueden ser implementadas en PYMES, de la misma manera en esta investigación se hará un análisis comparativo de PYMES de México, Canadá y Estados Unidos, para analizar el comportamiento de las mismas en los diferentes países y poder analizar las características de las PYMES exitosas, así mismo en esta investigación se hará un análisis teórico para conocer las opiniones de expertos y poder formular la solución al problema de una manera sustentada, por ultimo esta investigación hará un análisis estadístico sobre las PYMES en México para poder comparar datos que nos ayuden a determinar las características de las PYMES competitivas y sustentables.

#### Limitaciones y Delimitaciones:

Esta investigación estará limitada a las PYMES de México, con análisis comparativo de PYMES de otros países.

#### Objetivos / Propósitos:

Determinar una modelo de sustentabilidad y competitividad que se pueda implementar en las PYMES, que ayude a este tipo de empresas a convertirse en empresas grandes.

## CAPITULO I

### PYMES en México: Implementación de un modelo competitivo y sustentable

#### 1. Introducción

Las pequeñas y medianas empresas (PYMES) han sido por muchos años parte muy importante de la economía de un País, así como de la generación de empleos. Este tipo de empresas representan a nivel mundial un sector económico que genera fuentes de trabajo para un gran número de personas y que además contribuye al desarrollo de las economías. Internacionalmente, se puede determinar que más de un 90% del total de las unidades económicas, está conformado por las pequeñas y medianas empresas. Considerando la importancia que tienen estas empresas a nivel mundial no se puede dejar de lado la necesidad de apoyo que tienen para fortalecer su desempeño. Iniciativas defortalecimiento han surgido en diferentes países de la comunidad internacional para soportar el crecimiento de las mismas.

México en 1978 creó el programa de Apoyo a la industria Mediana y Pequeña (PAI). En dicho programa varios fondos y fideicomisos fueron agrupados. El enfoque del programa tenía por objeto alas empresas que empleaban entre 6 y 250 personas. Así mismo, en marzo de 1979, a través del Plan Nacional de Desarrollo Industrial, fue contemplada como pequeña industria a aquella cuya inversión en activos fijos era menor a 200 veces el salario mínimo anual vigente en el Distrito Federal (10 millones de pesos de aquel entonces). Por otro lado en 1985 la Secretaría de Comercio y Fomento Industrial (SECOFI), actualmente Secretaria de Economía (SE) definió los criterios a evaluar para la clasificación de las empresas según tamaño.(INEGI, 2011, p. 11)

A pesar de la importancia económica de las PYMES a nivel mundial, existe una problemáticacon la cual este tipo de empresas tienen que lidiar. Según académicos la falta de infraestructura para competir con empresas grandes contribuye a la desaparición de ese tipo de empresas. Análisis estadísticos nacionales demuestran que el promedio de vida de estas empresas es de 2 años. (BANXICO, 2015, p. 18) Además el Banco de México ha señalado que la falta de metodologías, sistemas, herramientas de mejora, tecnologías, y recursos económicos representan oportunidades de mejora para que estas empresas sean competitivas y sustentables.

Dos Aspectos que puedan ayudar a la solucionar esta problemática son las Competitividad y la Sustentabilidad. La competitividad es un tema que con la globalización económica se ha estudiado y conceptualizado, sin embargo los factores que la definen datan de mucho tiempo atrás (Hernández, 2000, p. 21). La competitividad, es la capacidad que tienen las empresas de vender de sus productos o servicios, así como aumentar su participación en el mercado sin afectar sus utilidades, siempre y cuando lo hagan en un mercado abierto y suficientemente competitivo (Porter, 1991, p. 33). Porter, en su definición describe tres elementos principales que hacen a las empresas competitivas, los cuales serán desarrollados a detalle más adelante.En otras palabras, no basta con que las empresas alcancen una participación considerable en el mercado, si no que se requiera que se mantengan y crezca su participación en el mercado de manera sostenida y continua. Es por ello la importancia de que la competitividad debe ser robusta y sustentable (Hernández, 2000, p. 24).

Otro factor para fortalecer las PYMES es la sustentabilidad, a pesar de que es un tema que empieza a sonar con mayor fuerza, esta teoría no fue inventada por la cumbre de Río de Janeiro de 1992: La Conferencia de las Naciones Unidas sobre Medio Ambiente y Desarrollo. En realidad la preocupación por el medio ambiente y la conservación de los recursos naturales tiene fuertes raíces históricas en Europa a finales del siglo XVIII. En la Conferencia de Río de Janeiro de 1992 se define el desarrollo sustentable y equitativo como una forma de crecimiento de la producción de bienes y servicios que permita respetar la integridad de la naturaleza y garantizar los equilibrios ecológicos globales y regionales (Urquidí, 2007, p. 275). Por otro lado el concepto de sustentabilidad engloba tres principales dimensiones: La económica, la ecológica y la social. El desarrollo sustentable una interconexión de estos tres campos de conocimiento, que si bien no ha sido suficientemente estudiada para determinar con exactitud la relación que se da entre ellos. Se argumenta que el desarrollo sustentable inspira a la definición de un proyecto de cambio de la organización económica y social actual. (Gutiérrez, 2007, p. 56)

El resto de esta investigación, abordará a detalle la importancia de las PYMES en la economía nacional, la competitividad de las mismas así como la importancia de la implementación de un modelo sustentable en dichas empresas.

## CAPITULO II

### 2. Importancia de las PYMES en Mexico

#### 2.1 PYMES Importancia económica en México con relación al PIB.

Las pequeñas y medianas empresas o PYMES han sido por muchos años parte muy importante de la economía de un País, así como en la generación de empleos. Este tipo de empresas representan a nivel mundial un sector económico que genera fuentes de trabajo para un gran número de personas y que además aporta un número considerable de unidades económicas. Internacionalmente, se puede determinar que más de un 90% del total de las unidades económicas, está conformado por las pequeñas y medianas empresas. Considerando la importancia que tienen estas empresas a nivel mundial no se puede restarle importancia a la necesidad de apoyo que tienen para fortalecer su desempeño. Es por ello que en México en 1978 se creó el programa de Apoyo a la industria Mediana y Pequeña (PAI). En dicho programa varios fondos y fideicomisos fueron agrupados. El enfoque del programa se basa en las empresas que empleaban entre 6 y 250 personas. Así mismo, en marzo de 1979, a través del Plan Nacional de Desarrollo Industrial, fue contemplada como pequeña industria a aquella cuya inversión en activos fijos era menor a 200 veces el salario mínimo anual vigente en el Distrito Federal (10 millones de pesos de aquel entonces). Por otro lado en 1985 la Secretaría de Comercio y Fomento Industrial (SECOFI), actualmente Secretaria de Economía (SE) definió los criterios a evaluar para la clasificación de las empresas según su tamaño. Microindustria a las empresas que emplean hasta 15 trabajadores y que sus ventas anuales son de hasta 30 millones de pesos. Industria Pequeña a las empresas que emplean hasta 100 trabajadores y que sus ventas anuales son de hasta 400 millones de pesos. Industria Mediana a las empresas que emplean hasta 250 trabajadores y que sus ventas anuales no son mayores de mil 100



millones de pesos. Desde 1985 el marco regulatorio y normativo de las actividades económicas de las PYMES, está a cargo de la Secretaría de Economía (INEGI, 2011, p.11)

A pesar de la importancia económica de las PYMES a nivel mundial, existe una problemática con la cual este tipo de empresas tienen que lidiar. La subsistencia es, según los expertos, es el mayor problema de las PYMES, ya que no pueden competir con grandes empresas y esto las lleva a la quiebra. EL Banco de México ha señalado que la falta de metodologías, sistemas, herramientas de mejora, entre otros, además de los recursos económicos, son oportunidades de mejora que las PYMES pueden implementar para que ayuden a estas empresas a ser competitivas y sustentables (BANXICO, 2015, p. 115), de lo contrario el no tener implementado todos los elementos mencionados anteriormente conlleva a que las PYMES en México solo tengan un promedio de vida de 2 años (BANXICO, 2015, p. 18)

El Banco de México es una institución que tiene sus fundamentos reglamentarios en el artículo 28 Constitucional. Asimismo, el ordenamiento reglamentario de la citada referencia constitucional, la Ley del Banco de México, establece la finalidad y objetivos de esta institución. El artículo 2 de la citada Ley define como las principales finalidades de éste Banco. Algunas de ellas son: promover el desarrollo del sistema financiero, y buen funcionamiento de los sistemas de pagos, a través de las tasas de interés, activas y pasivas. También por medio de las comisiones y pagos anticipados y adelantados de las operaciones que realicen con sus clientes. (Ley del Banco de México,1993). Otro ordenamiento jurídico que complementa las disposiciones bancarias es la Ley de Transparencia y Ordenamiento de los servicios financieros (LTOSF) otorga al Banco de México facultades para evaluar las condiciones de competencia de los servicios que ofrecen las entidades financieras y, en su caso, tomar las medidas regulatorias pertinentes(BANXICO, 2015, p. 12)

El porcentaje de aportación de las PYMES al Producto interno Bruto (PIB) es de 52% como se puede observar en la tabla 1, de tal manera que la importancia de este sector empresarial no puede pasar desapercibido (Tapia, 2012, p. 5)

**Tabla 1.-** Distribución de empresas mexicanas y su aportación al PIB

	Num. de Empresas	% del total de empresas	% de generacion de empleos	% de aportacion al PIB
Micro	4,877,070	94,8	45,6	15,5
Pequeña	2,149,56	4,18	23,8	14,5
Mediana	42,415	0,82	9,1	22,0
<b>PYME</b>	<b>5,134,441</b>	<b>99,8</b>	<b>78,5</b>	<b>52,0</b>
Grandes	9,615	0,2	21,5	48,0
Total	5,144,056	100,0	100,0	100,0

*Fuente:* Elaboración propia con base en censos económicos 2009 (Tapia, 2012)

## 2.2 La importancia de las pymes en México en la generación de empleos

Debido al gran reto que existe en la generación de empleos, creación de nuevas empresas y desarrollo de las ya existentes, la subsecretaría de la pequeña y mediana empresa ha llevado a nivel nacional programas de desarrollo económico que eran solo locales. Es del conocimiento del

Gobierno Federal que una de las problemáticas claves es el financiamiento, ya que la escasez de capital de riesgo a mediano y largo plazo, hace que las pequeñas y medianas empresas dejen de operar. En Marzo del 2009 se creó en México el programa ‘México Emprende’ con la finalidad de instrumentar la política PYME. Este programa tiene como principal objetivo brindar servicios de atención integral de una manera sencilla, rápida y oportuna tanto a emprendedores como a empresas, de acuerdo a su tamaño y potencial en un mismo lugar. El Programa aspira a impulsar de manera eficaz a las empresas y emprendedores que tengan proyectos viables que contribuyan a la generación de empleos. Para fomentar este programa, el Fideicomiso de México Emprende fue creado, vinculado a la Subsecretaría de la Pequeña y Mediana Empresa, así mismo se estableció una plataforma electrónica con la finalidad de facilitar el acceso a la información para que los empresarios y emprendedores tengan información a su alcance sobre los servicios y programas adaptados a sus necesidades. (Tapia, 2012, p. 15)

La generación de empleos, es sin duda una de las principales fortalezas de las PYMES en México, ya que emplea al 78.5% de la fuerza laboral de México. La tabla 2. Distribución de Empresas Mexicanas representa de una manera sencilla la importancia que tienen las PYMES en la generación de empleos

**Tabla 2.-** Distribución de Empresas Mexicanas

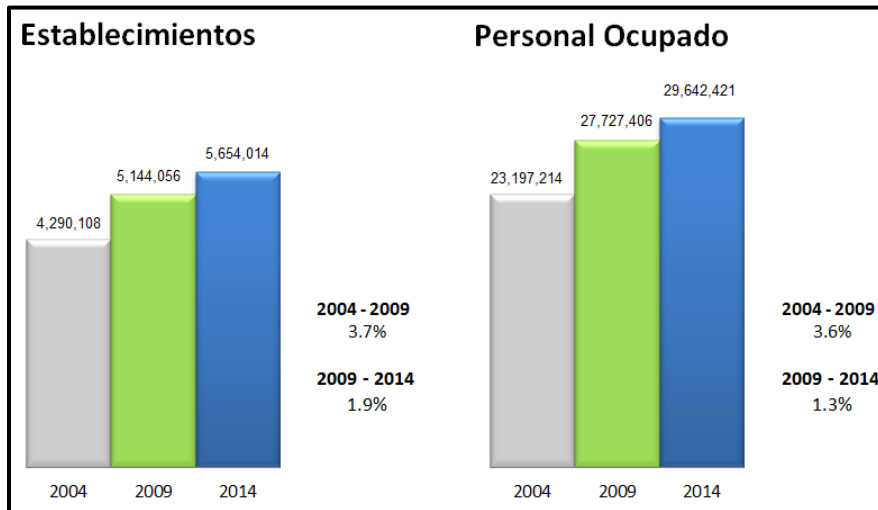
<b>Empresas</b>	<b>Nº de empresas</b>	<b>% del total de empresas</b>	<b>% de generación de empleos</b>
Micro	4,877,070	94.8	45.6
Pequeña	214,956	4.18	23.8
Mediana	2,415	0.82	9.1
<b>PYME</b>	<b>6,134,441</b>	<b>99.8</b>	<b>78.5</b>
Grandes	9,615	0.2	21.5
<b>Total</b>	<b>5,144,056</b>	<b>100</b>	<b>100</b>

*Fuente:* Elaboración propia con base en Censos Económicos 2009 (INEGI 2010) (Tapia, 2012, p. 5)

A pesar de que en la actualidad los jóvenes tienen mayor nivel educativo que sus padres e inclusive generaciones anteriores, y que también tienen también mayor acceso a la tecnología, esto no les garantiza que al final de su preparación académica cuenten con suficientes oportunidades de empleo. Mientras que para muchas personas de mediana edad la idea de un auto-empleo es una posibilidad atractiva, para otras, es la única alternativa de mantenerse productivos, sobre todo después de haber sido desplazados del mercado laboral. (Acosta, 2012, p. 95) El autoempleo es una opción laboral que se está considerando mucho en la actualidad, al darse cuenta que las ofertas laborales que existen no cubren los principales intereses de los solicitantes, estos recurren a ser sus propios empleadores, ofertando así sus conocimientos y experiencia. Sin embargo una de las desventajas que tienen estos emprendedores es que no siempre se corre con la fortuna de obtener actualizaciones en el área laboral que ofrecen, dejándolos atrás en cuanto a competitividad laboral se refiere, y de esta manera generándoles limitaciones en los ingresos económicos. Además de la desventaja mencionada, esta investigación abordará las principales desventajas que tienen las PYMES en México en un apartado independiente ya que no siempre se corre con la fortuna de obtener actualizaciones en el área laboral que ofrecen (Mendez, 2012, p. 23)

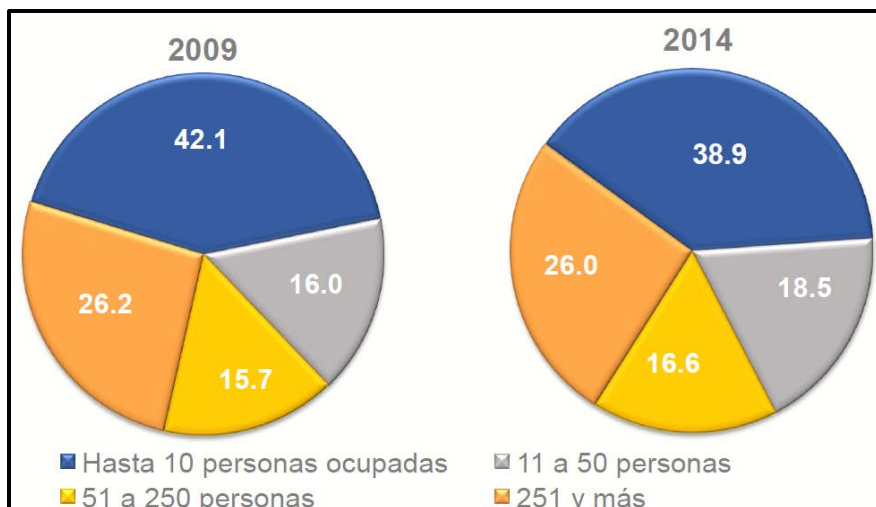
El valor que tienen las PYMES en la sociedad y en la economía mexicana está más que definida, ya que es la principal fuente de empleo, la importancia de las PYMES es tanto cuantitativa ya que ayuda en gran manera al desarrollo económico y cualitativa puesto que incrementa el desarrollo social del país (Acosta, 2012, p. 97) La generación de empleos es sin duda alguna el principal requisito para el crecimiento de cualquier economía, país, región además que soporta a otros métricos del país como la migración, entre otros. A partir del año 2004 se va visto favorecida la generación de empleos, aunque los resultados se no han sido suficientes para cubrir las necesidades de la población mexicana, es por ello la vital importancia de acelerar el ritmo de crecimiento de la actividad económica y el PIB per cápita. Principalmente el apoyo se requiere en las micros, pequeñas y medianas empresas, ya que estas, generan dos terceras partes del empleo formal del país. (Acosta, 2012, p. 99)

La figura 1 representa el crecimiento tanto de los establecimientos como del personal ocupado desde 2004 hasta 2014, el crecimiento porcentual entre los años 2004 y 2009 fue de un 3.6%, sin embargo el mismo métrico pero entre los años 2009 y 2014 fue de tan solo 1.3% lo representa un cierto estancamiento en cuestión de generación de empleos en los últimos años.



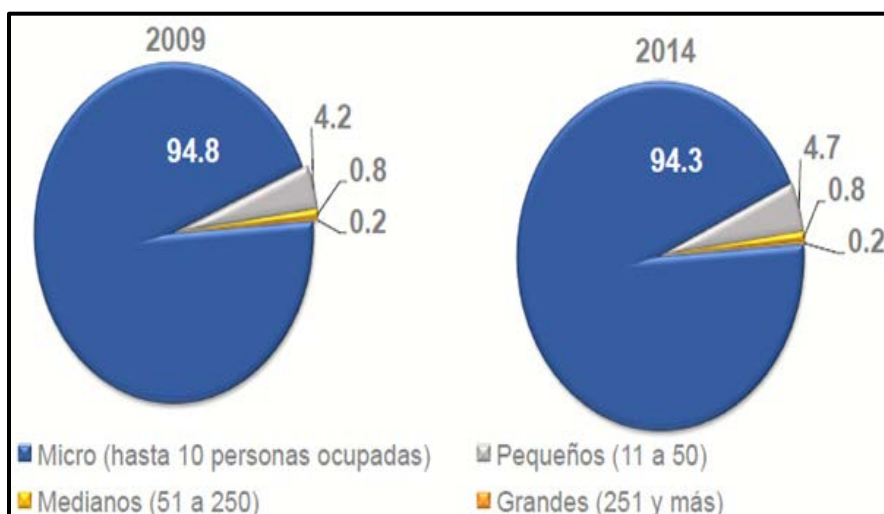
**Figura 1.-**Crecimiento de los establecimientos y personal ocupado  
*Fuente:* Elaboración propia con datos del INEGI 2014 pg10

La importancia de las PYMES en la generación de empleos es claramente notoria en comparación con grandes empresas, como lo explica la figura 2. Porcentaje de personas ocupadas por estratos. Las PYMES en el 2009 empleaban el 73.8% de las personas ocupadas, por otro lado en el 2014 el mismo tipo de empresas empleaban el 74% de la población laboralmente activa.



**Figura 2.-** Porcentaje de personas ocupadas por estrato  
*Fuente:* Elaboración propia con datos Censos Económicos 2014 pg.14

Las empresas establecidas en el país son sin lugar a dudas las principales generadoras de empleo, sin embargo las de mayor presencia en cuanto a unidades económicas se refiere son precisamente las Micro Empresas ya que representan un poco más del 94% del total de las empresas constituidas en nuestro país como lo explica la Figura 3. Porcentajes de establecimientos según número de personas ocupadas.



**Figura 3.-** Porcentajes de establecimientos según número de personas Ocupadas  
*Fuente:* Elaboración propia con datos Censos Económicos 2014 pg14 (INEGI, 2015, p. 14)

En cuanto al personal ocupado, cambios has sido significativos, como podremos observar en la tabla3, la tendencia de crecimiento en este rubro reflejado mediante varios eventos censales durante los años 1998 y 2008, observamos que el crecimiento del personal ocupado solo fue de un 7.63% durante el primer quinquenio, sin embargo en el periodo comprendido entre los años 2003 al 2008 el crecimiento dio un salto considerable, llegando a los 29.65 puntos porcentuales. (INEGI, 2011, p. 18)

**Tabla 3.- Crecimiento de personal ocupado y porcentual****Industrias manufactureras, Comercio y Servicios****Evolucion del personal ocupado total por estratos****1998, 2003 y 2010**

	Personal Ocupado			Crecimiento Porcentual		
	1998	2003	2008	1998 - 2003	2003 - 2008	1998 - 2008
Micro	6269866	6605124	9021573	5.34	36.58	43.88
Pequeña	2254054	2498763	3010303	10.85	20.47	33.55
Mediana	1238106	1403386	1590825	13.3	13.35	28.48
<b>PYME</b>	<b>9762026</b>	<b>10507273</b>	<b>13622701</b>	<b>7.63</b>	<b>29.65</b>	<b>39.54</b>
Grandes	3287983	3904480	4513335	18.75	15.59	37.26
<b>Total</b>	<b>13050009</b>	<b>14411753</b>	<b>18136036</b>	<b>10.4</b>	<b>25.8</b>	<b>38.97</b>

Fuente: Elaboración propia con los datos del cuadro 9 (INEGI, 2011)

### 2.3 Efectos de las crisis económicas en las PYMES

Los efectos de las crisis económicas mundiales afectan tanto a la economía como a las empresas mexicanas, sobre todo si se trata de las PYMES. Por ello surge la necesidad de que las Grandes Empresas de México en conjunto con el gobierno desarrollen e implementen acciones que permitan reestructurar el sistema económico nacional para que este promueva las competencias a largo plazo basados en el conocimiento y la innovación, y de esta forma integrar a las pequeñas y medianas empresas de una manera real y solidaria al sistema económico (Ortiz, 2009, p. 47). En el desarrollo de las PYMES son de vital importancia la competitividad y sustentabilidad de las mismas.

En México en 1978 se creó el programa de apoyo a la industria mediana y pequeña (PAI), en el cual se agruparon varios fondos y fideicomisos. Las empresas que empleaban entre 6 y 250 trabajadores eran cubiertas por este programa. Por otra parte los negocios que empleaban a cinco trabajadores o menos, eran considerados como talleres artesanales y no estaban cubiertos por este programa de apoyo. En 1979 a través del plan Nacional de Desarrollo Industrial se definió a la industria pequeña. (Mendez, 2012, p. 55) Sin embargo no fue sino hasta 1985 que la SECOFI en ese entonces, ahora la Secretaría de Economía clasificó a las empresas por su tamaño, según el número de personas que emplean (INEGI, 2011, p.11) En las décadas de 1980 y 1990, en el país se registraron etapas de desequilibrio financiero, así que el gobierno optó por crear instituciones que apoyaran la generación de empleo y el ingreso del país. Con la finalidad de evitar una situación de mayor impacto económico al que ya se estaba observando en ese entonces, Nacional Financiera, como banca de segundo piso y únicamente de manera complementaria, orientó sus apoyos a la atención de los requerimientos de las Pymes. (Mendez, 2012, p. 57)

El entonces presidente del país Miguel de la Madrid decretó en 1985 la transformación de Nacional Financiera, S. A. en Nacional Financiera, Sociedad Nacional de Crédito Institución de banca de desarrollo, el cual estaría a cargo de apoyar con financiamientos, capacitación y soporte técnico a las pequeñas y medianas empresas. (Mendez, 2012, p. 57) En la crisis económica de la década de 1990, concretamente en 1995, tanto las empresas como la red de intermediaciones institucionales bancarias se enfrentaron a serios problemas económicos. La pérdida de empleos a causa de la desaparición de apoyos para salvar empresas de las condiciones financieras en las que estaban fue demasiado notoria. El gobierno de Carlos Salinas de Gortari se proponía a restablecer el crecimiento económico a través del impulso de nuevas políticas de inversión principalmente en

el sector privado. La apertura comercial al ámbito internacional fue el resultado de estas nuevas políticas, sin embargo el país no estaba preparado para dicha apertura, muestra de ello fue el problema que enfrentan a partir de ahí la PYMES, ya que ahora además de competir con grandes empresas nacionales tenían que competir también con empresas transnacionales, lo cual las dejaba en notoria desventaja (Mendez, 2012, p. 58).

#### 2.4 Principales frenos / retos / complicaciones / desventajas con las que tienen que lidiar las PYMES en México

En la mayoría de los países así como también en México las empresas pequeñas normalmente producen para los mercados locales. Usualmente sus productos sufren de ser diseños viejos, de tener herramientas de producción anticuadas, productos de calidad baja así como mercadeo inadecuado. Estas empresas sufren además de bajos niveles de capital humano, no usan tecnologías y tienen acceso limitado a financiamientos. Aunado a lo anteriormente mencionado, en México existe un gran atraso en conocimientos de tecnologías de comunicación e información. La globalización ejerce una presión enorme sobre las PYMES a contratar capital humano que conozca de tecnologías de comunicación e información para poder innovar sus actividades. La siguiente tabla (Tabla 4) ilustra de una manera sencilla como México esta comparado con otros países en temas de tecnologías de comunicación e información. (OECD, 2007, p. 17).

**Tabla 4.** Difusión de las tecnologías de Información y comunicación

	Mexico	Polonia	Turquia	EU-15	US	Japon	Korea	OECD
Lineas de Acceso Estandar	15.9	29.6	26.7	43.5	59.5	40.4	57.7	43.6
Canales de Acceso	18.9	32.9	27.0	58.9	62.3	55.0	58.4	52.0
Suscripciones Móbiles	29.3	45.5	39.4	84.8	54.5	67.9	70.1	64.2
Suscriptores de internet a redes fijas	2.7	4.3	1.6	24.0	33.0	25.6	24.8	22.4
Acceso a Banda Ancha	0.4	0.8	0.1	5.9	9.7	10.7	24.2	7.2

*Fuente:* Elaboración Propia con datos de (OECD, 2007)

Entre otras desventajas con las que las PYMES en México tienen que combatir se encuentran las siguientes: Rezago tecnológico, altos consumos de energía, administración informal (de cajón), limitadas al acceso de financiamiento, altos costos de operación, las utilidades no se reinvierten para mejorar el equipo y las técnicas de producción, sus ganancias son bajas, por lo cual, muchas veces mantienen el margen de operación y con muchas posibilidades de salirse del mercado, no pueden contratar personal especializado y capacitado por no poder pagar altos salarios, la calidad de sus productos no siempre es la mejor, ya que no cuentan con sistemas de control de calidad o estos son mínimos, no pueden capacitar y/o actualizar a su personal, y cuando lo hacen enfrentan el problema de fuga de personal capacitado, sus posibilidades de fusión y absorción de empresas son reducidas o nulas, además algunos otros problemas como: ventas insuficientes, debilidad competitiva, mal servicio, mala atención al público, precios altos o calidad mala, activos fijos

excesivos, mala ubicación, descontrol de inventarios, problemas de impuestos y falta de financiamiento adecuado y oportuno. (Acosta, 2012, pp. 7, 79)

## CAPITULO III

### 3. Competitividad de las PYMES

#### 3.1 Factores que determinan la competitividad

La competitividad es un aspecto que obtiene cada vez mayor notabilidad en el campo de las empresas, lo cual deriva de los requerimientos del sector económico actual encuadrado en el proceso de globalización. (Saavedra, 2012, p. 95). Es un tema que con la globalización económica se ha estudiado y conceptualizado, sin embargo los factores que la definen datan de mucho tiempo atrás. Al analizar la competitividad, se debe tener presente diferentes niveles en que puede ser aplicada, estos niveles deben ser claramente considerados al definir una metodología adecuada para la evaluación de la competitividad (Hernández, 2000, p. 23)

La competitividad, es la capacidad que tienen las empresas de vender de sus productos o servicios, así como aumentar su participación en el mercado sin afectar sus utilidades, siempre y cuando lo hagan en un mercado abierto y suficientemente competitivo. (Porter, 1991, p. 33), en la definición de Porter, existen tres elementos principales que van desde el aumento de la participación en el mercado, además de operar en mercados abiertos pero sobre todo competitivos, sin sacrificar las utilidades. Sin embargo existen otros elementos importantes que deben ser considerados por las empresas al determinar sus factores de competitividad. El operar con bajos costos de operación y mantener precios competitivos sin duda alguna mantendrá a las empresas entre las preferidas de los consumidores. En otras palabras no basta con que las empresas alcancen una participación considerable en el mercado, si no que se requiere que se mantenga y crezca su participación en el mercado de manera sostenida y continua. Es por ello la importancia de que la competitividad debe ser robusta y sustentable (Hernández, 2000, p. 24).

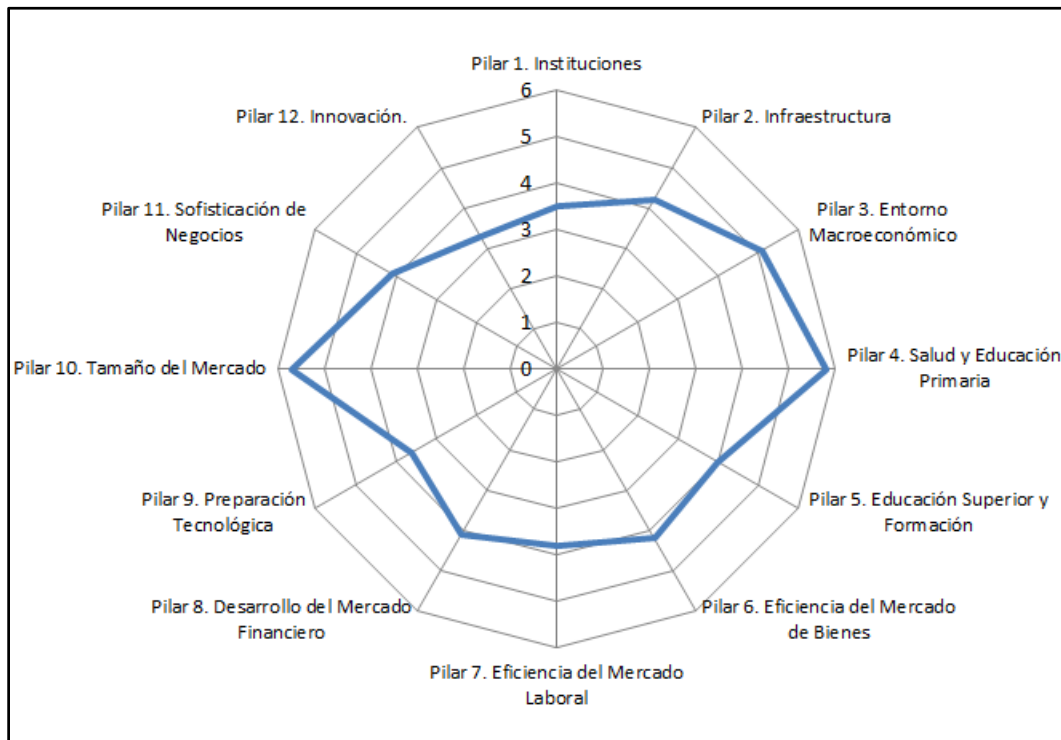
Los factores tecnológicos son fundamentales para la competitividad de las empresas en general y para la eficiencia en la utilización de insumos en particular (OECD, 2007, p. 17). En efecto la tecnología no solo determina las posibilidades de producción de nuevos productos, si no también afecta la eficiencia de la producción a través de tres factores principales que varias empresas han considerado como los principales para mantenerlas en un nivel de competitividad adecuado: Servicio al cliente, reputación e imagen, calidad del producto o servicio. (García, 2004, p. 74). Los factores que determinan la competitividad de las empresas señaladas por Porter (1991), Hernández (2000) y García (2004) como la calidad del producto, reputación, imagen, buena administración contable, precios bajos, re-inversión de utilidades en mejoras, entre otros, aun cuando son importantes, en la opinión del autor solo son elementos de soporte. Los factores cruciales y de mayor impacto para determinar si una empresa es competitiva son el incremento sostenido de la participación en el mercado y la generación de utilidades proporcionales a las ventas.



### 3.2 Como se mide la competitividad

La posición competitiva de México se ha visto ciertamente deteriorada según el Índice Global de Competitividad (IGC) del International Institute for Management Development (IIMD), entre los años 1999 y 2002, México paso del 35 al 41. Por otra parte el índice de crecimiento de competitividad (ICC) del World Economic Forum (WEF), la caída fue de 14 lugares; de la posición 31 en 1999 a la posición 45. (IMCO, 2003, p. 1) Actualmente México se encuentra en la posición número 57 según la WEF. (WEF, 2016, p. 8)

El ICG o WEF tiene como objetivo analizar una muestra de países de acuerdo a su nivel de competitividad con base en 12 pilares. Pilar 1. Instituciones, Pilar 2. Infraestructura, Pilar 3. Entorno macroeconómico, Pilar 4. Salud y Educación Primaria, Pilar 5. Educación superior y formación, Pilar 6. Eficiencia del mercado de bienes, Pilar 7. Eficiencia del mercado laboral, Pilar 8. Desarrollo del mercado financiero, Pilar 9. Preparación tecnológica, Pilar 10. Tamaño del mercado, Pilar 11. Sofisticación de negocios, Pilar 12. Innovación. Este índice se construye con 114 variables, de las cuales 34 son datos duros (obtenidos de bases de datos elaboradas por agencias internacionales) y 80 son de percepción (obtenidos de la Encuesta de Opinión Ejecutiva realizada por el WEF). A través de un análisis comparativo de diferentes variables, se determina cuál es el país con las mejores condiciones para favorecer el desarrollo de la economía, al mismo tiempo que genera mayores niveles de bienestar para su población. (WEF, 2016, p. 5) La figura 4 representa la posición de México en los doce pilares de la WEF.



**Figura 4.-** México en los 12 Pilares de la WEF.

*Fuente:* Elaboración Propia con datos de (WEF, 2016)



## CAPITULO IV

### 4. La sustentabilidad en las empresas

El significado de la sustentabilidad se enfoca en satisfacer las necesidades de las generaciones actuales sin poner en riesgo a las generaciones futuras de ser capaces de satisfacer sus propias necesidades en el tiempo futuro que les toque vivir. Para lograr esto es necesario ciertos factores como el bienestar, desarrollo, medio ambiente y futuro, que están implícitos sean analizados. Por otra parte el concepto de sustentabilidad engloba tres principales dimensiones: La económica, la ecológica y la social. El desarrollo sustentable es una interconexión de estos tres campos de conocimiento, que si bien no ha sido suficientemente estudiada para determinar con exactitud la relación que se da entre ellos. Se argumenta que el desarrollo sustentable inspira a la definición de un proyecto de cambio de la organización económica y social actual. (Gutierrez, 2007, p. 45) Sin embargo la preocupación por el medio ambiente y la conservación de sus recursos naturales tiene fuertes raíces históricas principalmente en Europa a finales del Siglo XVIII. Sin embargo en la conferencia de Rio de Janeiro de 1992 sobre el medio ambiente y el desarrollo, se definió el desarrollo sustentable equitativo como una forma de crecimiento de la producción de bienes y servicios que permita respetar la integridad de la naturaleza y así mismo garantizar los equilibrios ecológicos tanto globales como regionales. (Urquidi, 2007, p. 275)

Por otro lado el adoptar el desarrollo sustentable como objetivo, significa un tema de carácter global para los países en desarrollo y para los organismos internacionales. Este contexto considera indispensable que se tengan en cuenta consideraciones ambientales en la planeación del desarrollo, así mismo se deben implementar enfoques que sean complementarios a la evaluación del impacto al medio ambiente. (Ahumada, 2012, p. 291)

La sustentabilidad en las empresas se limita a las estrategias de implementación de nuevos procesos, adopción de tecnologías de producción se enfocan en evitar desperdicios, reciclar basura y eliminar tóxicos. No obstante el papel de las empresas en cuanto a sustentabilidad es poco aceptado ya que se piensa que las organizaciones son la causa que genera desde la degradación ambiental hasta la pobreza y que con sus asentamientos en lugares inadecuados propicia desastres, así mismo las políticas económicas inadecuadas contribuyen al deterioro del medio ambiente. (Vargas-Hernandez, 2010, p. 161)

La cultura del cuidado del medio ambiente en una organización, se inserta como una variable de interpretación racional de funcionamiento para la protección del medio ambiente, dicha variable está compuesta por otros valores ambientales como: la promoción al cuidado del medio ambiente, el control del riesgo medioambiental, la relación adecuada entre organizaciones, la integración de grupos de trabajo y la orientación y asesoría sustentable permanentes. (Vargas-Hernandez, 2010, p. 162)

Por lo tanto el rediseño ecológico de los sistemas de producción se plantea en razón de los requerimientos de manufactura la responsabilidad ambiental sobre los recursos, las emisiones, los costos de basura y el reciclaje, como la integración de la cadena del proceso. Para lograr esto, es necesaria una promoción de cambios hacia el interior de las empresas. Dicho cambio requiere un serio involucramiento de las organizaciones con su medio ambiente pero sobre todo una

reestructuración cultural organizacional que aliente la cultura y el resultado ambiental. (Vargas-Hernandez, 2010, p. 162)

En este ensayo se desarrollaran los tres principales elementos de la sustentabilidad, como lo son los aspectos económicos, sociales y ambientales.

#### 4.1 Aspecto Económico de la sustentabilidad en México

La sustentabilidad ambiental en México fue abordada en el Plan Nacional de Desarrollo 2007-2012, como la administración eficiente y racional de los recursos naturales para así cumplir con uno de los objetivos principales de la sustentabilidad que es mejorar el bienestar de la población actual sin comprometer la calidad de vida de las generaciones futuras. Además en dicho plan de desarrollo se consideró que el país enfrenta varios retos y que uno de los principales es incluir al medio ambiente como uno de los elementos de la competitividad y el desarrollo económico y social para llegar a un desarrollo sustentable. De la misma manera este plan considera que aún se está a tiempo de implementar medidas necesarias para que los proyectos federales como lo son los de infraestructura sean compatibles con la protección y cuidado del medio ambiente. (Ahumada, 2012, p. 292)

La Ley General del Equilibrio Ecológico y la Protección al Ambiente en su artículo 28 hace obligatoria la evaluación del impacto ambiental previo a la realización de obras y actividades mencionadas en dicho artículo de la ley citada (La Ley General del Equilibrio Ecológico y la Protección al Ambiente, 1988)

En el 2005 México y más de 100 países suscribieron en la Declaración de Paris la importancia de la evaluación ambiental estratégica sobre la eficacia de la Ayuda al Desarrollo que el desarrollo sustentable representa una temática global que solo podrá ser alcanzada si los países en desarrollo y la organización para la cooperación y el Desarrollo Económicos unen esfuerzos. (Ahumada, 2012, p. 299)

#### 4.2 Aspectos Sociales de la sustentabilidad en México

La responsabilidad social forma parte del concepto de sustentabilidad organizacional. Como se ha mencionado el concepto de sustentabilidad se preocupa por lograr el bienestar Económico pero sobre todo sin descuidar los efectos que este proceso pueda tener sobre el medio ambiente y la sociedad. Esta idea ha marcado un cambio de paradigma que implica poner las tres dimensiones en un plano de igualdad: Desarrollo económico, equidad social y conservación del medio ambiente. Cuando la economía se globaliza, surgen nuevas y mejores oportunidades para los negocios de poder mejorar la calidad de vida de la población, Sin embargo existen riesgos que se deben tener en consideración, ya que si bien se logra mejorar la calidad de vida de muchas personas, el medio ambiente o inclusive otras personas pueden salir afectados. Es por ello la importancia de que las organizaciones encuentren un equilibrio al operar sin que se vean afectadas los tres principales factores de la sustentabilidad, económico, social y medio ambiente. (Blazquez, 2012, p. 41)

La Responsabilidad Social Empresarial definida por el Instituto Ethos de Brasil como una forma de gestión para la relación ética y transparente de la empresa con todos los públicos con los cuales se relaciona y por el cumplimiento de métodos empresariales con el desarrollo sustentable de la sociedad, teniendo como prioridad la preservación de recursos ambientales y culturales para las futuras generaciones. Por otra parte la ISO 26000 determina que, la responsabilidad de la empresa a través de un comportamiento transparente y ético, deberá extenderse a contemplar los impactos que generan sus decisiones y actividades en la sociedad y el medio ambiente. Es por ello que dentro de la Organización Internacional para la Estandarización dentro de su norma 26000 se revisan siete material fundamentales como: La gobernanza de la Organización, Los derechos humanos, Prácticas Laborales, Medio Ambiente, Practicas Justas de Operación, Asuntos consumidores y la Participación Activa y desarrollo de la comunidad, véase FIGURA 5 (ISO, 2010, p. 4)

La Responsabilidad Social Empresarial es una autorregulación de la empresa que considera aspectos sociales y ambientales, esto debe hacer apeguándose a las leyes locales, tratados y normas internacional, entre otros, esto no quiere decir que las empresas deben dejar de pensar en las utilidades tampoco que se trata de un nuevo gasto para las empresas, si no que el objetivo es satisfacer las necesidades de las partes involucradas. (Blazquez, 2012, p. 42)



**Figura 5.-** Responsabilidad Social: 7 materias fundamentales  
*Fuente:* (ISO 26000 Responsabilidad Social, 2010)

### 4.3 Aspectos Ambientales de la sustentabilidad en México

Los Grandes proyectos que pudieran repercutir o afectar el entorno natural han sido evaluados en apego a al artículo 28 de la Ley General del Equilibrio ecológico y la Protección al Ambiente, en lo que a la evaluación del impacto ambiental se refiere. Sin embargo en los casos de programas de desarrollo urbano o de ordenamiento ecológico del territorio donde se incluyan obras mencionadas en el artículo 28 de la citada Ley, el artículo 32 de la misma deja a discreción de las autoridades

competentes el someter dichos proyectos a una evaluación de impacto ambiental. La forma en que gestionen proyectos ambientales afectara el éxito futuro del desarrollo y jugara un papel significativo en el avance hacia los Objetivos de Desarrollo del Milenio. Dichos objetivos representan esfuerzos internacionales entre más de 189 países incluido México, para reducir la pobreza global, tales objetivos fueron adoptados por la Asamblea General de las naciones Unidas en el año 2000. (Ahumada, 2012, p. 300). Por otro lado y en soporte de los Objetivos de Desarrollo del Milenio existe el Plan Acción de Johannesburgo realizado durante la Cumbre Mundial sobre Desarrollo Sustentable en 2002, en dicho plan se refuerza la importancia de la toma de decisiones equilibrada para combatir los principales problemas ambientales mundiales (Plan de Accion de Johannesburgo, 2002, p. 2)

## CAPÍTULO V

### 5. Conclusiones y Propuestas

Basado en el estudio realizado en el desarrollo de esta investigación, se puede claramente constatar la importancia que tienen las PYMES en la economía, desarrollo y sociedad de un país como México. De la misma manera se puede concluir que a pesar de los programas y legislaciones implementadas en México aún hay mucho por hacer en cuanto a desarrollo de PYMES, es por ello que el autor propone que programas de desarrollo pero sobre todo de seguimiento sean implementados.

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# **Competitividad del sector alimenticio Mexicano en el comercio global: oportunidades de mejora basadas en modelo de sistema de calidad, HACCP**

GUILLERMO CORTES SANCHEZ<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*Esta investigación se centra en la temática relativa a la competitividad del sector alimenticio en el comercio global, considera la importancia de la regulación de la alimentación, sanidad e inocuidad. Identifica la problemática del bajo crecimiento en exportaciones de alimentos en el sector agrícola y agropecuario (Balanza Comercial: 2010). El autor plantea como solución a la problemática abordada en esta investigación fomentar la competitividad en el sector, implementación de modelos de calidad análisis de peligros y puntos críticos de control. Lo anterior a fin de que las PYMES tengan un desempeño sólido y sustentable.*

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<sup>1</sup> Address correspondence to Guillermo Cortes Sanchez, Division de Estudios de Posgrado e Investigación, Facultad de Comercio, Administración y Ciencias Sociales de Nuevo Laredo, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. E-mail: [guillermocortes@hotmail.es](mailto:guillermocortes@hotmail.es)

# Apache Cassandra

BHARGAV SAI DAMA<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

MOHITH SRIKANTH KASUKURTHI

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*Cassandra is open source and is being developed at Apache. The Apache Cassandra venture unites Dynamo's completely appropriated plan and Bigtables Column family based information model.*

*Cassandra is adjusting to late advances in disseminated calculations like Accural style disappointment location and others. Cassandra is demonstrated as it is being used by Digg, Facebook, Twitter, Reddit, Rackspace, Cloudkick, Cisco. The biggest creation group has more than 100 TB of information in more than 150 machines. It is Fault tolerant, decentralizes and gives the control to designers to pick in the middle of synchronous and offbeat information replication. It offers rich information model, to proficiently figure utilizing key and esteem sets. It is profoundly adaptable both regarding stockpiling volume and solicitation throughput while not being liable to any single purpose of disappointment. It is tough and backings outsider applications. Cassandra plans to keep running on top of a base of many hubs (conceivably spread crosswise over various server farms).*

*At this scale, little and huge parts fizzle constantly. The way Cassandra deals with the tenacious state even with these disappointments drives the unwavering quality and adaptability of the product frameworks depending on this administration. While from numerous points of view Cassandra takes after a database and shares numerous configuration and usage techniques therewith, Cassandra does not bolster a full social information model; rather, it furnishes customers with a straightforward information display that backings dynamic control over information design and arrangement. Cassandra framework was intended to keep running on shabby thing equipment and handle high compose throughput while not yielding read productivity.*

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<sup>1</sup> Address correspondence to Bhargav sai Dama, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd., Laredo, Texas 78041, USA. E-mail: [hargavsaidama@dusty.tamtu.edu](mailto:hargavsaidama@dusty.tamtu.edu)

# Apache Storm

MONIKA SUNKARA<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

SRIKANTH PARUCHURI

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*Apache Storm is a popular low latency distributed stream processing framework. Apache Storm is used everywhere at yahoo and at many other companies from automatically tagging every image uploaded to Flickr and analyzing trending search queries to monitoring production servers looking for problems. This hands-on tutorial consists the basics of Storm, its architecture. Apache Storm works on task parallelism principle where in the same code is executed on multiple nodes with different input data. Since Storm's master node (called Nimbus) is a Thrift service, one can create and submit processing logic graph (called topology) in any programming language. Moreover, it is scalable, fault-tolerant and guarantees that input data will be processed.*

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<sup>1</sup> Address correspondence to Monika Sunkara, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd., Laredo, TX 78041, USA. E-mail: [monikasunkara@dustytamiu.onmicrosoft.com](mailto:monikasunkara@dustytamiu.onmicrosoft.com)

# Apache Samza

AVINASH PINJERLA

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

KUMAR BABU<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

VINAY KUMAR YERRAVALLI

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*On a global scale most of the applications wants to go real time. There are many batch processing tools like Map Reduce, SQL on Hadoop for breaking down and processing data but at times we require to process endless data as it needs to be responded within seconds. Now arises a question on how to implement in Hadoop scale?*

*Apache Samza is the solution for these sorts of complications. It is an open source stream processing framework which aims to provide near-real time asynchronous computation. YARN/HADOOP 2.0 and Apache Kafka are used to develop Apache Samza. In other words it is a real time continuously processing form of MapReduce. Samza is unique and powerful because of its distinct features. It gives increased performance in stateful processing jobs and also involving collection and joins between multiple input streams. It is intended to bolster an ecosystem community of a wide range of jobs composed by various teams, and it segregates them from one another, so that one misguided error can't influence the others. Our aim is to present how Apache Samza is implemented in real time.*

## REFERENCES

<http://samza.apache.org/>

<https://cwiki.apache.org/confluence/display/SAMZA/Stream+Processing+Papers>

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<sup>1</sup> Address correspondence to Kumar Babu, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd, Laredo, TX 78041, USA. E-mail: [kumarbabu@dustytamiu.onmicrosoft.com](mailto:kumarbabu@dustytamiu.onmicrosoft.com)

# Hadoop (PIG) Data Flow Language

DIMPI SRAVANI PENMATHSA<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

SHRUTHI VENKATESH

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

SAI DEEPTHI GUNTHA

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

SAJNI DOSHI

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*Processing the big data has become a big challenge for the companies in recent times. Data has been increasing exponentially as the usage of internet is getting essential and this results to Big data. This Data in turn is a big asset for the companies. Performing Analytics on this data to increase their business is becoming a prime motto. This is making the big market players coming up innovatively to analyze their data, this made the raise of PIG- Big data Platform. PIG has become an essential tool for performing data processing at massive scale. This document will give a walkthrough of the following things:*

- *High level overview of Hadoop data processing framework*
- *How Apache Pig & Apache Hive fit into Hadoop data processing ecosystem*
- *Apache Pig architecture and data flow language*
- *Apache Hive architecture and query language*
- *Pig Latin Scripting*
- *Strengths of Apache Pig*
- *Disadvantages of Pig*
- *Comparing Apache Pig and Apache Hive and when to use which*
- *Upcoming query processing technologies & productivity tools.*

*Target Audience:*

- *Data Analysts*
- *Data Scientists*
- *Developers who have knowledge on Hadoop*

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<sup>1</sup> Address correspondence to Dimpi Sravani Penmathsa, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd., Laredo, Texas 78041, USA.  
E-mail: [dimpisravanipenmaths@dusty.tamiu.edu](mailto:dimpisravanipenmaths@dusty.tamiu.edu)

# The Insertion of Brazilian Industry in Global Value-Added Chains

JONATHAN DIAS FERREIRA<sup>1</sup>

*Regional Development and Agribusiness, State University of West Paraná – UNIOESTE  
Cascavel, Paraná, Brazil*

MIRIAN BEATRIZ SCHNEIDER

*College of Economic Sciences and the Graduate Program in Regional Development and  
Agribusiness and Economics Program, State University of West Paraná – UNIOESTE Cascavel,  
Paraná, Brazil*

*This paper analyzes how Brazil is positioned in global value-added chains as a prerequisite of international insertion. The Index of Revealed Comparative Advantage (IVCR) was applied to determine the insertion of Brazilian industry in global trade since 2000. It can be concluded that Brazil takes part in global value-added chains by its connection to other countries which use Brazilian supplies in their exports. Referring to products taking part in those global value-added chains, the most important ones are originated from natural resources such as mining and agriculture, amongst others. It should be emphasized that if the country pretends to participate more effectively in global value-added chains, it should stimulate more investments and participation in planning, creation and development of new products.*

**KEYWORDS**    *International trade; global value-added chains; Brazilian industry.*

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<sup>1</sup> Address correspondence to Jonathan Dias Ferreira, Professor and Researcher, Master of Regional Development and Agribusiness, State University of West Paraná - UNIOESTE. Cascavel, Paraná, Brazil.  
E-mail: [jonathanferreiraa@hotmail.com](mailto:jonathanferreiraa@hotmail.com)

## 1. INTRODUCTION

The globalization of business is responsible for changes in the way we produce goods and services in recent decades, mass production was restructured and actually, companies are driven by the pursuit of lean production, with a growing trend of outsourcing of activities and by an international integration. This coincided with the need for transnational corporations to expand its markets and its, in order to operate with larger scales and the lowest possible cost (DUPAS, 2005).

Nowadays, production is geographically dispersed and fragmented in several stages, known as "global value chains" - CGV, which transformed the world, revolutionized the development options facing poor countries. Now countries can participate in the supply chain, rather than having to invest decades in building your own. (BALDWIN, 2013).

According to Prochnik (2010), the CGV arise from the increasing relocation of production activities by the leading firm, which seeks to retain key skills and pass the rest to other firms, its subsidiaries or not, are often located abroad. Companies inserted in this context develop input supply activities, production, marketing, logistics and distribution in order to meet the end consumer, in the conception of a growing fragmentation of these activities is consequence of the geographical dispersion of them. These activities can be carried out by the same company or fragmented between various companies through outsourcing activities.

Companies pass through a need of creating partnerships with countries in the production of goods, in order to reduce costs and increase the range of markets and generate externalities for the actors involved. This setting changes the function of selling products to produce products and thus make possible gains. In this way, companies have sought on changing its organizational focus in the search for external economies through outsourcing rather than opt for vertical integration of activities. In the globalized world, outsourcing gaining strength, with new global divisions of labor, based on the idea that every company must devote itself to its core competencies.

In this context, industry is the sector that has great potential to boost economic and social development of a nation, especially in countries at intermediate stages of development such as Brazil, enabling the country to integrate more strongly in global value chains. Currently, Brazil has a diversified industrial manufacturing base, comprising 27 industrial activities from mineral industry, petroleum, chemical and food industries, as well as intensive products in technology, such as aeronautics, electrical, automotive and pharmaceutical industries (IBGE, 2011).

The Swiss IMD business school (2013), presents an analysis of 60 economies on competitiveness and business efficiency. The Top of the World Competitiveness Center (WCC) in 2009 showed Brazil in 40th place and in 2010 there was a slight improvement to 38, but since then Brazil has been showing loss of position in the ranking 44, 46 and 51 for the years 2011, 2012 and 2013 respectively.

In this context, the present work has as main objective to analyze the situation of Brazil in global value chains. Moreover, it was possible to discuss the participation of Brazilian industry in the international context, based on Comparative Advantage Index applied to the industrial sector. It is necessary to understand the situation of the Brazilian industry in the global value chains, in

order to discuss the role of industry and for companies able to insert increasingly in international trade and encourage industry participation in higher value-added steps and technological intensity.

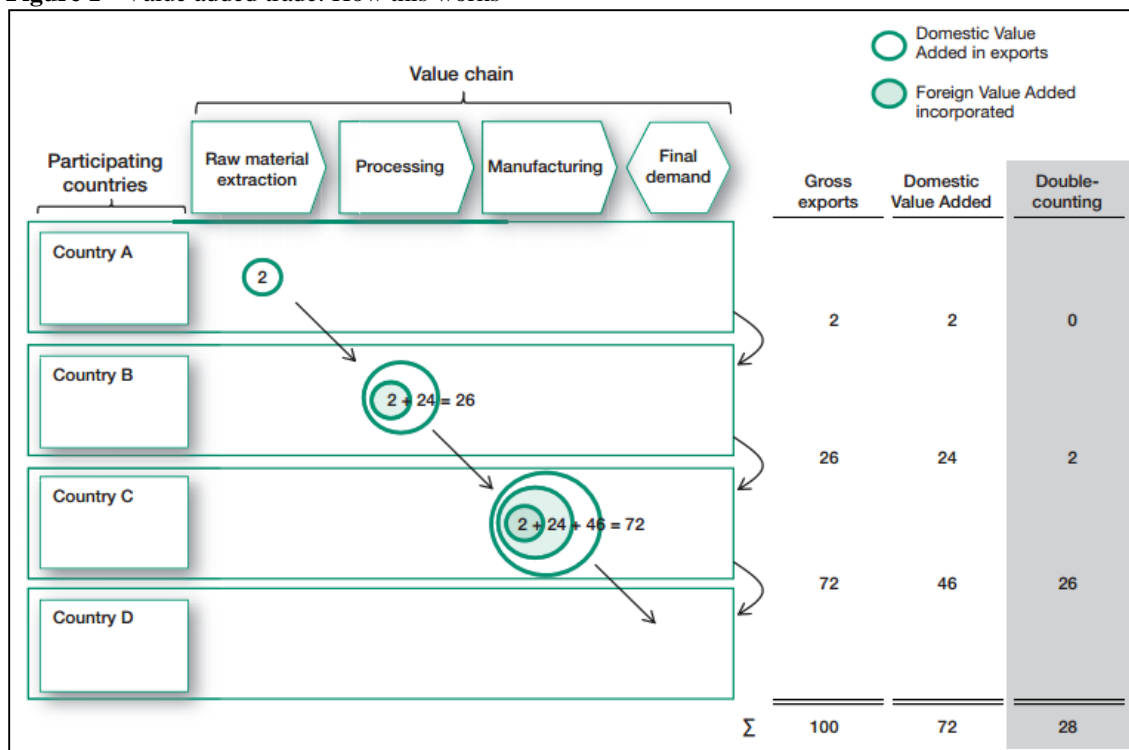
The work is thus divided, besides this introduction: Section 2 presents the concept of global value chains. In section 3, it is an analysis of Brazil's participation in global value chains, based on the OECD / WTO data, in section 4, the IVCR for the Brazilian industry was used as a parameter for international insertion. Finally, Section 5 presents the final remarks.

## 2. THE GLOBAL VALUE CHAINS

The outsourcing of activities evolves more and more companies specialized in one part of the business that collectively form the CGV. And improving techniques are the responsible for this geographical dispersion, driven by commercial costs decreased as a result of greater liberalization of economies.

In Figure 1, it is shown how they are divided activities in the global value chain for the production of a particular product. At first is extracted the raw material of country A, which in turn can be exported to country B that performs processing, then exported back to the country C responsible for manufacturing, which ultimately can be exported to the country D as the final consumer.

**Figure 1 - Value added trade: How this works**



Source: UNCTAD (2013)



Thus, the global value chain comprises several stages of production, from extraction activities as the primary sector to manufacturing adding value along the chain. The iPhone is a famous example of a product derived from the global value chain, as shown in Table 1, analysis of the US trade balance in iPhones. Roughly speaking, the US imported from China the equivalent of US \$ 1,901.2 billion in iPhones, however, when observing the fragmentation of activities for production of this product, concludes that China represents 3.87% of the production of iPhones imported into the US. Japan is the country with more representation, corresponding to 36.02% of production.

**Table 1** - US trade balance on iPhones (US \$ million)

	China	Japan	Korea	Germany	Rest of the world	World
Traditional measure	-1,901.2	0	0	0	0	<b>-1,901.2</b>
Added value	-73.5	-684.8	-259.4	-340.7	-542.8	<b>-1,901.2</b>

Source: Miroudot (2011) apud OCDE/OMC (2013).

It is noteworthy that the share of each country varies according to their degree of openness to trade and foreign investment, its allocation of natural resources, human and technological resources and its geopolitical relations with the most powerful countries in the world and its nearest neighbors (STURGEON et al., 2013).

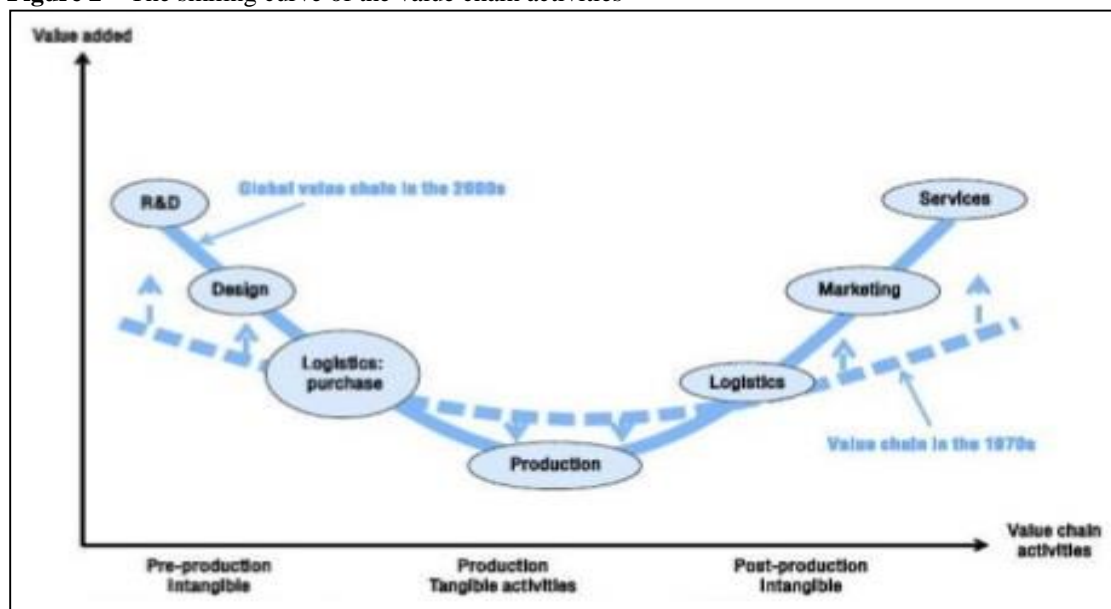
According to the OECD (2013) the fragmentation of production in all countries is not a new phenomenon. What is new is their increasing scope and scale. Companies can now disperse production worldwide, because marketing costs decreased significantly, mainly due to technological advances. Also, transportation in containers, standardization, automation and increased intermodal freight transport facilitated the movement of goods in CGV, although the distance is still important.

Trade liberalization resulted in lower trade barriers, particularly for rates and further reduced costs. The liberalization of investment allowed firms to disperse their activities, and liberalization of emerging economies has helped to extend CGV beyond the industrialized countries. Regulatory reforms in the sectors of transport and key infrastructure, such as air transport, also lowered their costs. (OECD, 2013)

Another important motivation as the OECD / WTO (2013) is that access to new foreign markets, demographic changes and rapid growth in several economies means an opportunity for companies that are becoming international. However, to achieve these new markets, it is necessary that companies are present, through distribution and production facilities, with local presence that allows us to understand and explore overseas markets.

Therefore, it is important to analyze the activities that compose the global value chain and the steps that have more value added, as shown in Figure 2. Activities related to R & D and services are those that generate more value added, the production activity it is the least that generates added value, called "smile curve".

**Figure 2** – The smiling curve of the value chain activities



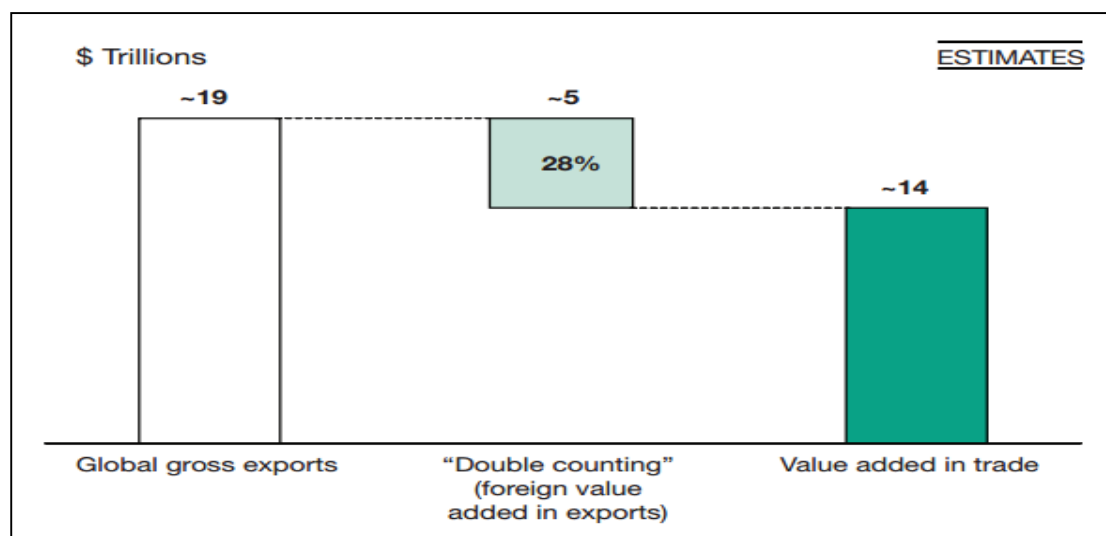
Source: OCDE/OMC (2013)

Furthermore, it is possible to verify that, marketing and services gained more evidence from the years 70. It should be noted, moreover, that these stages of the chain are made up primarily of services, not goods, which shows that specialization of an economy in industrial manufacturing stages cannot have the same positive significance for development that represented decades ago (OLIVEIRA, 2014).

Baldwin (2013) explains that production stage adds less value because it is directly related to the accounting activities of the costs. When a value of a stage is reduced by the outsourcing their participation in value added features decreases as the value of an additional step is based on cost.

According to UNCTAD estimates (2013) globally, of the \$ 19 trillion exported in 2010 goods and services, the average value added by foreign countries in world exports were about 28%, about \$ 5 trillion. The remaining \$ 14 trillion is the real value added as contribution of trade to the world economy.

**Figure 3 - Value added in trade in 2010**



Source: UNCTAD (2013)

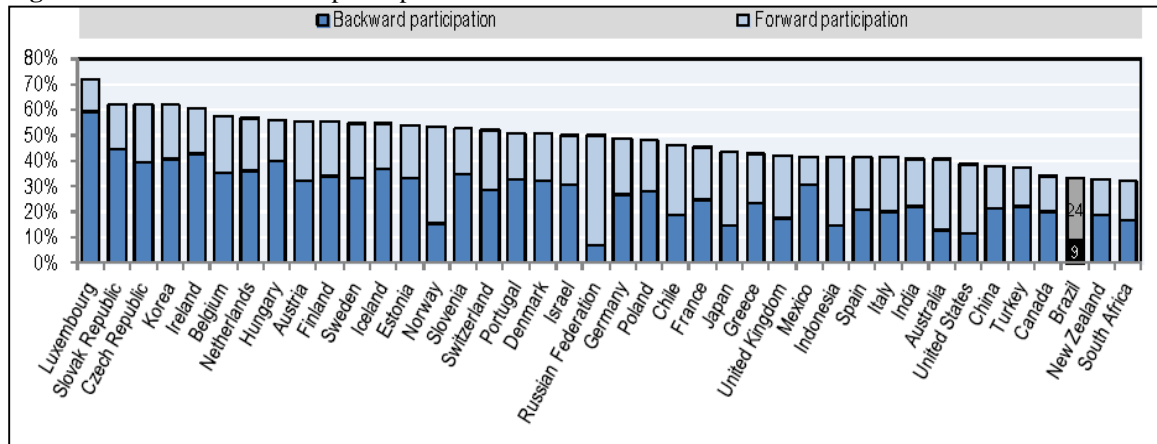
The added value of foreign exportation indicates that part of gross country's exports consist of raw materials that have been produced by other countries, or the extent to which exports of a country dependent on imported content.

### 3. THE INTEGRATION OF BRAZIL IN GLOBAL VALUE CHAINS

In order to understand the degree of integration of countries in GVCs, the OECD and the WTO in 2013, began to measure the participation of countries in GVCs. The first indicator measures the share of foreign inputs contained in exports that a country is part of the CGV called backward chaining the production chain. The second indicator measures the share of inputs produced in a country contained in the exports of other countries, called forward chaining. The result of the two has an index of what would be the country's participation in GVCs.

According to the OECD report (2013) on Brazil, as shown in Figure 4 on the next page, the share of the country is mainly related by links with other countries using Brazilian inputs in its exports. Participation forward is linked above all to the great Brazilian exports of natural resources.

**Figure 4 - Global value chain participation and selected countries in 2009.**

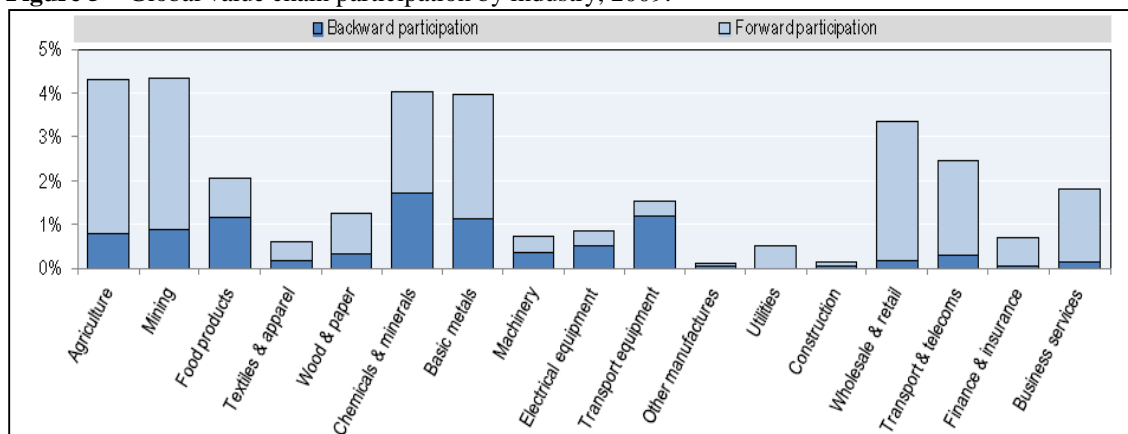


Source: OCDE/OMC (2013).

Thus, adding the index, Brazil participates in the GVC with 33%. According to Reis and Almeida (2014) smaller economies like Luxembourg, Slovak Republic, Belgium, Singapore and others, have higher rates of backward participation and fewer conditions to diversify domestic production enough to rely on imports. In contrast, large exports of mineral products, such as Australia and Brazil, tend to have less foreign content in their exports.

The index reveals European production sites, Asian and American and also the significant dependence of many countries have on imports to generate exports. Mexico, with its “maquiladoras”, and China, with its processors and assemblers, about a third of total exports reflect foreign content (AHMAD, 2013). In this sense it is important to analyze the products that make up the GVCs in which Brazil is inserted. The most present exports are forward, composed of mining, agriculture, chemicals and minerals and base metals, as shown in Figure 5.

**Figure 5 – Global value chain participation by industry, 2009.**



Source: OCDE/OMC (2013)

Thus it can be concluded that Brazil is present in the global value chain as a supplier of raw materials, since the country has the largest representation at CGV in the index forward, in other

words, a greater presence in the share of raw materials produced in Brazil contained in the exports of other countries.

Although the inclusion in global developing countries chains, such as Brazil, contribute to economic growth, has not been adequate to develop activities that generate greater value added, with strong impacts on technological progress and enabling the overcoming of duality structural in terms of wages and productivity (REIS and CARDOSO, 2014).

Brazil has been struggling in getting insertion gains in world trade and has as challenges to improve their export basket in quantity and quality. Currently the country has a strong and diversified economy, stands out as a country with an important role in exports, mainly of mineral commodities, agricultural and manufactured goods.

As a developing country, according to the World Bank report, Brazil ranks 7th among the largest economies in the world, behind the United States, China, Japan, Germany, France and the UK. However, the Brazilian economy slowed significantly during 2011 and 2012, GDP growth of 7.5%, slowed to 2.7% in 2011 and reached 0.9% in 2012. Industrial production and investment demand they were affected disproportionately. (World Bank, 2014)

#### 4. BRAZILIAN INDUSTRY PARTICIPATION IN THE WORLD TRADE

To assess the inclusion of Brazilian industry in world trade from the 2000s, it has been used the Comparative Advantages Index Revealed (IVCR) proposed by Balassa in 1965, based on the Law of Comparative Advantage of Ricardo.

According to Balassa (1965) the IVCR calculates the share of exports of a product coming from an economy compared on exports of a reference zone of that same product, and compares this ratio with the participation of total exports of this economy on exports total of the reference zone. For this paper, exports of Brazilian industry were used as the reference area.

The IVCR does not take into account the presence of distortions in the economy, such as tariff and non-tariff barriers, subsidies, trade agreements and misalignments of exchange, which can affect the results of the indices. However, it serves to describe the pattern of trade of a given economy (SILVA; MONTALVAN, 2008).

It is considered that the comparative advantage index revealed to a region or country, in an industry or industrial group  $i$  may be defined as shown in Table 1.

**Table 1** - Formula Comparative Advantage Index

$IVCR_j = (X_{ij}/X_i) / (X_{wj}/X_w)$ <p>Where: X<sub>ij</sub> = Value of Brazilian industry exports; X<sub>i</sub> = Total value of Brazilian exports; X<sub>wj</sub> = Total value of global industry exports; X<sub>w</sub> = Total value of world exports; i = Brazilian exports; w = World exports; j = Industry.</p>
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Source: Balassa (1965)

If the IVC is greater than one, the country has revealed comparative advantage for exports from the industry; and if the IVCR index is smaller than one the country has revealed comparative disadvantage for export industry. Note the use of the comparative advantage index in recent work, for export sectors and selected products. However, for exports of Brazilian industry, few studies presented as analysis using the IVCR in recent years, highlighting the importance of this work as research from 2000s.

Horta and Souza (2000) evaluated the evolution of Brazilian exports between 1980 and 1996 for industrial products in order to identify and characterize the insertion capacity of Brazilian products in major world markets. Therefore, the authors used the IVCR as comparative analysis of this set of estimates (for periods, sectors and markets) that have identified trade flows at certain times had more or less dynamism. As a result, this paper wants to demonstrate seeks to demonstrate that there is a reduced ability of orientation of exports from Brazil to the hottest niche products and markets in world trade, as well as the largest markets gains are concentrated in sectors effectively low dynamism in which the country has traditionally IVCR.

Pais, Gomes and Colonel (2012) use the IVCR to analyze the exports of iron ore, from 2000 to 2008. As a result, a downward evolution of the revealed comparative advantage index confirms the decline in the participation of Brazilian iron ore on the international market. However, the largest value of the unit over the entire that Brazil still have comparative advantages for the product considered. According to the authors, to compete in an increasingly globalized market, Brazilian companies should invest in effective strategies in order to win more dynamic markets and increase trade with existing partners, increasing thus their participation in international trade in iron ore.

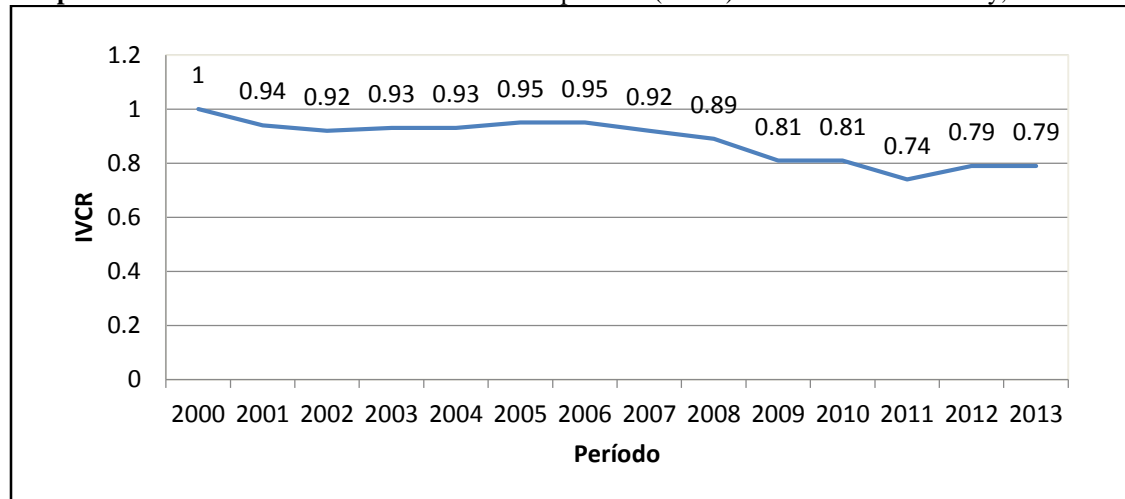
It was also observed using IVCR like an approach in research in other countries: Utkulu and Seymen (2004) analyzed the competitiveness and the standard of the Turkish trade flows towards the European Union at sectoral levels. Bhattacharyya (2011) evaluated the competitiveness of India's horticulture sector using IVCR as a model against its major rivals in Asia, American markets, the European Union for the year 2009.

Thus, in order to raise the insertion extent of the Brazilian industry in the international context, calculating the Benefits Index Comparative Revealed allows us to identify the importance of a product in the export relative to the world.

According to Figure 1, the values found for Comparative Advantages Index Revealed (IVCR) have on average decreasing values over the analysis period. The best result of IVCR was only in the year 2000. From 2000 to 2013, IVCR presented figures indicating that the Brazilian industry has been losing comparative advantage and export competitiveness of the sector. It also notes that the indices as well as being less than unity, were decreasing, except for 2003-2006, when there was a small increase in rates.

According to Cunha, Lélis and Fligenspan (2013) the performance of foreign trade of manufacturing industry is based on two findings: (i) the Brazilian economy experienced between 2004 and 2008, the longest growth cycle since the 1970s, especially the behavior of investments; and (ii) the world economy is going through structural changes derived from the rise of the emerging economies.

**Graph 1 - Benefits Index Evolution Revealed Comparative (IVCR) of the Brazilian industry, 2000-2013.**



Source: Research data

It can be seen that in the years 2003-2004 the IVCR remained at 0.93 and in 2005-2006 there was an increase in the rate to 0.95, a growth that can be related to the increase in Foreign Direct Investment lived in the period, since, as Cunha, Lélis and Fligenspan (2013) report that Foreign Direct Investment (FDI) that after suffering setbacks at the beginning of the Lula government, especially in 2003, FDI kept a steady growth path since 2005, of course interrupted with the crisis of 2008/2009, reaching 2010 to its highest point with a volume of US \$ 48.5 billion.

According to Table 2 on the next page, Brazilian exports grew 308.4%, from US \$ 55 billion in 2000 to US \$ 225 billion in 2014. In turn, imports also increased from US \$ 55 billion 229 billion, an increase of 316% in the period, being higher exports. Starting in 2008, before the international financial crisis triggered in the United States, the world consumption shrank and with it Brazilian exports fluctuated, as shown in table 2.

**Table 2 - Brazilian trade balance in US \$ billion**

Year	Exports	Imports	Balance
<b>2000</b>	55.118	55.839	-721
<b>2001</b>	58.288	55.572	2.716
<b>2002</b>	60.440	47.240	13.200
<b>2003</b>	73.202	48.291	24.911
<b>2004</b>	96.677	62.835	33.842
<b>2005</b>	118.527	73.606	44.921
<b>2006</b>	137.807	91.351	46.456
<b>2007</b>	160.649	120.621	40.028
<b>2008</b>	197.942	172.984	24.957
<b>2009</b>	152.994	127.647	25.347
<b>2010</b>	201.915	181.768	20.146
<b>2011</b>	256.039	226.243	29.796
<b>2012</b>	242.578	223.183	19.394
<b>2013</b>	242.178	239.620	2.557
<b>2014</b>	225.101	229.031	-3.930

Source: MIDIC (2014)

In this regard, in 2008 exports were \$ 197 billion, but in 2009 at the height of the crisis exports fell to \$ 152 billion, down 22.71%, while in the same period imports retreated 26.21%. Against this background, in 2014 the Brazilian foreign trade registered a trade deficit of US \$ 3.9 billion, the first since 2000. Imports totaled US \$ 229 billion, down 4.42%, while exports shrank 7% over the previous year.

For the Brazilian government, before the President Dilma pronouncement, the crisis that followed from 2008, endures to the present day and the way is to seek greater diversity of local production, on pain of being trapped to the vicious circle of mere export of raw materials, the current scenario of falling commodity prices requires this change (FOREQUE, 2014).

In addition, according to the Foreign Trade secretary, Daniel Godinho, three factors contributed to the deficit in 2014: fall in the price of most commodities than expected, mainly iron ore; the unfavorable international scenario - especially the economic recession in Argentina - and the deficit in the oil account (MIDIC, 2015).

Analyzing Brazilian exports by aggregate factor (basic, semi-manufactured, manufactured), from 2000 to 2014, according to Table 3, there is a change in the export basket composition in this period, from the export of commodities to overcome export semi-manufactured and manufactured products.



**Table 3 - Brazilian Exports by aggregate factor US \$ billion**

Year	Basics	% Part.	Part. Semi-manufactured. (A)	% Part.	Manufaturado. (B)	% Part.	Industry (A+B)	% Part.	Total
2000	12.564	22,79	8.499	15,42	32.558	59,07	41.027	74,44	55.117
2001	15.349	26,33	8.243	14,14	32.957	56,54	41.145	70,59	58.288
2002	16.959	28,06	8.965	14,83	33.068	54,71	41.965	69,43	60.440
2003	21.186	28,94	10.944	14,95	39.763	54,32	50.597	69,12	73.201
2004	28.528	29,51	13.432	13,89	53.137	54,96	66.379	68,66	96.675
2005	34.723	29,30	15.962	13,47	65.360	55,14	81.105	68,43	118.527
2006	40.280	29,23	19.522	14,17	75.022	54,44	94.541	68,60	137.807
2007	51.595	32,12	21.799	13,57	83.942	52,25	105.743	65,82	160.649
2008	73.027	36,89	27.073	13,68	92.682	46,82	119.755	60,51	197.942
2009	61.957	40,50	20.499	13,40	67.349	44,02	87.848	57,42	152.994
2010	90.004	44,58	28.207	13,97	79.562	39,40	107.770	53,37	201.915
2011	122.456	47,83	36.026	14,07	92.290	36,05	128.955	50,37	256.039
2012	113.454	46,77	33.042	13,62	90.707	37,39	123.749	51,01	242.578
2013	113.023	46,67	30.525	12,60	93.090	38,44	123.615	51,04	242.178
2014	109.557	48,67	29.066	12,91	80.211	35,63	109.277	48,55	225.101

Source: MIDIC (2014)

The commodity exports jumped from \$ 12 billion in 2000 to \$ 109 billion in 2014, a significant growth of 771%. On the other hand, semi-manufactured products increased by 241% during this period. And manufactured products with higher added value, soared from 32 billion in 2000 to \$ 80 billion in 2014, an increase of 146%.

The share of commodities in Brazilian exports in 2000 accounted for 22.8%, while manufactured goods (the sum of semi-manufactured and manufactured) together accounted for 74.5% of exports. However, in 2014 the export of commodities came to represent 48.7%, while the export of manufactured goods has been significantly reduced by 26%, registering a share of only 48.5% being due to this decreased relative share of both semi-manufactured goods 2.5% for manufactured 23% of the total composition of industrial goods over the period analyzed.

According to Table 4, the twenty main products of exports in 2014, representing 60% of total exports. Of these, 71% are commodities (iron ore, soybean meal, crude petroleum oil, soybean meal, chicken, coffee beans, beef, corn, beans and tobacco leaves).

**Table 4** - The top twenty products of Brazilian exports in 2014

<b>Basics Products</b>	<b>% Part.</b>
Iron ores and concentrate	11,47
Soy whether or not broken	10,34
Petroleum oils	7,18
Bran and residues from soybean oil extraction	3,06
Frozen poultry meat, fresh or chilled	3,05
Raw coffee beans	2,68
Frozen beef, fresh or chilled	2,57
Corn grain	1,72
Tobacco leaves and waste	1,07
<b>Semi-manufactured products</b>	
Raw cane sugar	3,31
Cellulose	2,35
Semi- finished products of iron or steel	1,42
Hides and skins, hair, except raw	1,30
Ferroalloy	1,22
<b>Manufactured products</b>	
Airplanes	1,52
Fuel oils (diesel "fuel oil", etc.)	1,52
Passenger cars	1,42
Parts and accessories for motor vehicles and tractors	1,15
Oxides and hydroxides of aluminum	1,07
Motor vehicle engines and parts	0,97

Source: MIDIC/SECEX

The semi-manufactured products (cane sugar, cellulose, iron or steel, leather and fur, iron and alloys) represent 9.6%, while manufactured products (diesel oil fuel, passenger cars, planes, parts and vehicle parts cars and tractors, aluminum oxides and hydroxides, engines for motor vehicles and parts) accounted for only 7%. Together, industrial products account for 17.25%, of the twenty main export products.

It can be concluded that given the analysis of the Brazilian export basket composition in terms of value between 2000 and 2014, there is an evidence of a significant increase in the share of basic products for industrial, however, this significant increase was accompanied by growing diversification within the composition of commodities. It is noteworthy, however that the list of exports of primary products is diversified, but the country still needs to move towards adding value to its primary products and the way is industrialization.

Table 5 highlights the top ten countries of destination for Brazilian exports, a comparison between 2000 and 2014 in values and interests. In this sense, it can see that China was the country with the most growth in Brazilian exports during the period, followed by India, Venezuela, Netherlands (Netherlands), among others.

**Table 5 - Top ten markets for Brazilian exports in US \$ millions 2000-2014 order Countries**

<b>Order 2000</b>	<b>Order 2014</b>	<b>Countries</b>	<b>2000</b>	<b>% Part.</b>	<b>2014</b>	<b>% Part.</b>	<b>%Var</b>
12	1	China	1.085	1,97	40.616	18,04	3.643
1	2	USA	13.180	23,93	27.027	12,01	105
2	3	Argentina	6.232	11,31	14.281	6,34	129
3	4	Netherlands	2.796	5,08	13.035	5,79	366
5	5	Japan	2.472	4,49	6.718	2,98	171
4	6	Germany	2.525	4,59	6.632	2,95	162
11	7	Chile	1.246	2,26	4.984	2,21	300
40	8	India	217	0,39	4.788	2,13	2.106
15	9	Venezuela	751	1,36	4.632	2,06	516
6	10	Italy	2.145	3,90	4.020	1,79	87
<b>Total General</b>			<b>55.085</b>	<b>100,00</b>	<b>225.100</b>	<b>100,00</b>	

Source: MIDIC/SECEX

In 2000, China occupies the 12th place with US \$ 1,085 billion and climbed to 1st place in 2014, with an amount of US \$ 40.6 billion imported from Brazil. According to MIDIC data (2014), along the historical series it was in 2009 that China (US \$ 20.1 billion) overtook the United States (US \$ 15.6 billion) as the main destination market for Brazilian exports.

In addition to the significant growth experienced by Brazilian exports to the Chinese market, also draws attention to the composition of primary products, since only the three main exports are commodities: Minced even soybeans (US \$ 16.38 billion), ore iron (US \$ 12.3 billion) and crude petroleum oils (US \$ 3.4 billion), accounting for 80% of exports to the Chinese.

Therefore, so that Brazil can grow with quality is needed to export value-added in manufactured products. However, what is observed is a growing export commodities such as were found in the case of China, the main trading partner of Brazil.

With regard to imports in the period analyzed (2000-2014), as shown in Table 6, imports of manufactured goods are those which had more growth in participation of the agenda during the period in 2000 accounted for 83.18% and in 2014 passed representing 79.61% of total imports.

**Table 6 - Brazilian imports by aggregate factor FOB US \$ million**

Year	Basics	% Part.	Part. Semi-manufactured. (A)	% Part.	Manufaturado. (B)	% Part.	Industry (A+B)	% Part.	Total
2000	7.290	13,06	2.100	3,76	46.444	83,18	48.544	86,94	55.839
2001	6.793	12,22	1.896	3,41	46.891	84,38	48.787	87,78	55.572
2002	6.834	14,47	1.683	3,56	38.722	81,97	40.406	85,53	47.240
2003	8.130	16,85	1.926	3,99	38.202	79,16	40.128	83,15	48.291
2004	11.690	18,62	2.818	4,49	48.272	76,89	51.090	81,38	62.835
2005	12.813	17,42	3.165	4,30	57.573	78,28	60.738	82,58	73.606
2006	17.163	18,79	4.305	4,71	69.882	76,50	74.187	81,21	91.351
2007	21.773	18,05	5.659	4,69	93.184	77,26	98.843	81,95	120.621
2008	31.830	18,38	8.888	5,13	132.477	76,49	141.365	81,62	172.984
2009	18.729	14,67	5.100	4,00	103.817	81,33	108.917	85,33	127.647
2010	23.891	13,14	7.103	3,91	150.773	82,95	157.877	86,86	181.768
2011	32.082	14,18	9.380	4,15	184.782	81,67	194.163	85,82	226.243
2012	29.281	13,12	9.023	4,04	184.843	82,83	193.867	86,88	223.183
2013	30.565	13,80	7.528	3,40	183.358	82,80	190.886	86,20	239.620
2014	36.797	16,07	9.735	4,25	182.339	79,61	192.074	83,86	229.031

Source: MIDIC (2014)

Imports of semi-manufactured products deserve attention, because they are products that are still in production, can generate gains for the country that imports through the production stage for processing into manufactured product. In 2000, imports were \$ 2.1 billion and achieved a small increase to \$ 9.735 billion in 2014. The point is that the share of total imports practically remained stable, once in 2000 represented 3.76 % in 2014 and now represents 4.25% of total imports, the growth rate of only 13% over the period.

Together, the semi-manufactured and manufactured products representing industrial products, accounted for 83.86% of total imports in 2014, down on the 2.71% rate in the previous year, but over the growth period was 295%. On imports of commodities, rose from US \$ 7.29 billion in 2000 to US \$ 36.797 billion in 2014, an increase of 404% in value, but with a small share of total imports, with only 16.07% in 2014.

Thus, you can see that addition of a country is an exporter of commodities, also stands as an important consumer market, since industrial products are the ones that stand out on the Brazilian import tariff. Moreover, within the group of industrial products, manufactured goods are the ones that have representation, thereby demonstrating that Brazil is ceasing to produce products or at least participating in some stage of production of products, since the semi were the least grew up with little participation on the Brazilian import tariff.

According to Table 7, you can see the top twenty products that make up the agenda of Brazilian imports in 2014, divided by aggregate factor, together representing 41.7% of total imports. Of these, 8.45% are commodity, 1.26% of semi-manufactured goods and 32% of manufactured goods.

**Table 7 - The twenty major products of the Brazilian import tariff in 2014**

<b>Basic Products</b>	<b>% Part.</b>
Petroleum oils	6,78
Natural Gas	1,67
<b>Semi-manufactured products</b>	
Potassium chloride	1,26
<b>Manufactured goods</b>	
Fuel oils (diesel "fuel oil", etc.)	3,94
Passenger cars	3,35
Parts and accessories for motor vehicles and tractors	3,12
Medicines for human and veterinary medicine	2,95
Naphtha	2,18
Electronic integrated circuits and micro assemblies	1,98
Insecticides, pesticides, herbicides and prods.semelhantes	1,51
Printed circuits and others parts p /mobile telephony	1,50
Transmitters or receivers	1,45
LNG	1,37
Heterocyclic compounds, salts and sulfonamides	1,35
Cargo vehicles	1,32
Instruments and appliances for measuring, checking, etc.	1,32
Motors, generators and transformers electronics and parts	1,28
Fertilizers or fertilizers with Nitrogen, phosphorus and potassium	1,20
Polymers of ethylene, propylene and styrene	1,10
Bearings and gears, parts and pieces	1,07

Source: MIDIC/SECEX

According to Table 8 can be seen the top ten Brazil's supplier countries, a comparison between 2000 and 2014 in values and interests. In 2014, China (US \$ 37.34) stood out as the main market of origin of imports from Brazil, followed by the United States (US \$ 34.999), Argentina (US \$ 14.14) and Germany (US \$ 13.83), among others.

**Table 8** - The top ten suppliers in Brazil table between 2000-2014 in US \$ million

Order		Countries	2000	% Part.	2014	% Part.	%Var
2000	2014						
11	1	China	1.221	2,19	37.340	16,30	2.958
1	2	USA	12.864	23,06	34.999	15,28	172
2	3	Argentina	6.843	12,27	14.143	6,17	106
3	4	Germany	4.420	7,93	13.837	6,04	213
20	5	Nigeria	737	1,32	9.495	4,15	1.188
8	6	South Korea	1.429	2,56	8.526	3,72	496
33	7	India	271	0,49	6.635	2,90	2.348
5	8	Italy	2.170	3,89	6.309	2,75	190
4	9	Japan	2.959	5,31	5.902	2,58	99
6	10	France	1.886	3,38	5.698	2,49	202
Total General			55.783	100,00	229.060	100,00	

Source: MIDIC/SECEX

Among the ten selected countries, the ones that have achieved growth over the period analyzed were China which jumped from 11th place in 2000 and went on to occupy the 1st place in 2014, a jump of 2,958% of imports in value, followed by India It emerged from 33rd place in 2000 and occupying the 7th position in 2014, another country that also deserves attention is Nigeria, went from 20th place to 5th place in 2014, an increase in trade of 1,188% and with participation in 2014 1.32%. Together the ten selected countries represent 62% of the total imported by Brazil in 2014.

## 5. FINAL CONSIDERATIONS

Understanding Brazil's situation in the so-called global value chain, as a requirement for international integration that was the main focus of this paper. In addition, we applied the Comparative Advantage Index (IVCR) with the aim to analyze the insertion of Brazilian industry in world trade from the 2000s can be concluded that Brazil participates in the global value chain by links with other countries using Brazilian inputs in its exports. Analyzing the products that make up Brazil's participation in the global value chain, it is possible to verify the presence of natural resources, such as mining, agriculture, base metals and others. It is noteworthy that for Brazil to take advantage of global value chain, it is necessary that the country participate in the stages of production with higher added value, which will stimulate investment and participation in the creation of stages, planning and development of new products.

About IVCR, it can be seen that the Brazilian industry has been losing comparative advantage in exports of the sector, with a more marked drop from 2008 after the international financial crisis. The difficulty in creating an environment that stimulates the important investments for industry growth, combined with the high cost of producing and inadequate infrastructure in Brazil, may be further inflaming the performance of the industrial sector.

At the end of 2014, it was observed that Brazilian exportation of basic products accompanied by a diversification of the agenda, plunged exports of industrial products. However, the country

needs to encourage the sectors with higher added value of the economy, since, in addition to losing share in exports of industrial products, there was also a significant increase in imports of the same, highlighting Brazil as an important consumer market, but it is necessary to encourage industrial production in order to meet this domestic demand for industrial products and avail themselves of the gains from trade.

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# **Amidst Political Rift with the U.S., Israel seeks New Economic Alliances in Asia**

SARAH KATZ<sup>1</sup>

*Middlebury Institute of International Studies  
Monterey, California, USA*

*Following the state's founding in 1948, Israel's fragile presence as the sole Jewish nation in the predominantly Muslim Middle East has kept trade low with its immediate neighbors. However, following years of conducting the majority of its trade with Western countries such as the U.S. and the European Union, increased demand for Israeli exports has arisen from Asia. Now, particularly in the face of diminished faith in the United States as both a strategic ally and trading partner, Israel has turned its attentions toward two rapidly growing economies in the East: China and India. With growing Chinese investment in Israeli high-tech innovation and increased revenue from military arms exports to India, Israel could soon afford to replace dependency on U.S. weapons imports with domestically produced defense technology.*

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<sup>1</sup> Address correspondence to Sarah Katz, Middlebury Institute of International Studies, 460 Pierce St, Monterey, California 93940, USA. E-mail: [skatz@miis.edu](mailto:skatz@miis.edu)

## CHANGING TIDES: ISRAELI TRADE AT A GLANCE

Perhaps not surprisingly provided its nickname, the ‘startup nation,’ Israel is currently a high-income country with a GDP per capita of US\$304.22 billion (Israel GDP 2015). Nevertheless, Israel’s precarious situation as a tiny outlier nation in the geopolitically volatile Middle East implicates challenges for both Israeli national and market security. Today, Israel’s primary international export is high-tech defense technology (World Trade Policy Review, 2015) equipment that the state once largely imported from the United States and has now come to produce domestically, selling the output to trade partners in various corners of the globe.

Who are these distant commercial partners of Israel? In fact, Israel does significant trade in Asia, with China and India representing its largest trading partners. At present, Israel trades expertise in many categories of high-tech innovation with Chinese investors as well as provides India with agricultural and military defense technology (Parashar 2014). When analyzing partnerships, we must examine both strategic as well as business alliance. In general, while Israeli exports to China mainly consist of agricultural technology, including the cutting edge drip irrigation system to support farmers in rural China (China Bilateral Trade Review 2011), Israel’s farming products to India are supplemented by a host of defense equipment, making the Jewish State India’s second largest arms supplier after Russia. (Israel-India 2013) This relatively recent trend in defense technology begs the question of strategic importance placed by India on military imports from Israel, especially provided India’s increasing tensions with Pakistan, a situation of hostility among neighbors that Israelis understand all too well. Herein lies the apparent difference between Chinese and Indian interest in Israeli exports: while the former seeks investment profit from technology, the latter desires enhanced security through trade of military technology specifically.

Finally, our preface would not be complete without a reference to the United States, Israel’s largest trading partner, top exporter of weapons and foreign investment, and a participant in official bilateral trade with Israel since the year 1985 (Zanotti 2015). Indeed, the U.S. has remained a strong supporter of Israel’s national security throughout the past six decades and yet, the current prospect of improved trade relations with Iran could be said to have Israel questioning American loyalty and turning to Asian markets, such as China and India, as a result. At its core, Israel’s perilous political position has instilled a need for national security as a chief element of Israeli cultural ethos (Glick 2006). Such a value can be observed not only in the identity of Israel’s new geographically distant trade partners but also in the nature of the main products traded. In the near future, however, Israel might have to consider manufacturing its own weapons rather than relying upon U.S. imports.

## CHINA AND ISRAEL: INVESTMENT IN INNOVATION, TRADE IN DEFENSE

With a wealth of high-tech startups blossoming throughout the Jewish State, Chinese investors have flocked to Israel’s market. In fact, this past year of 2015 has seen Israeli exports to the Far East nearly surpass those to the U.S., with a rise of 4.7% in goods to Asia (Coren 2014). Such burgeoning trade between China and Israel has resulted in plans for an official bilateral free trade agreement proposed for the year 2015 (Blanchard 2014). Already, a new tax agreement is

underway to facilitate trade in addition to the influx of Chinese foreign investment already flowing into Israeli startups (Elis 2015). Successfully eased commercial relations will ideally support the exchange of goods, services and investment in all industries between these two fast-growing markets. For example, it could make it easier for Chinese investors to travel more freely back and forth to Israel and enable the establishment of Israeli research and development facilities in China to supplement their Chinese counterparts already operating in Israel.

Of course, commercial relations between China and Israel have included political challenges of weapons trade, reaching as far back as the Chinese communist period under Mao Zedong. Whereas Mao wrote off Israel as a Western-backed symbol of imperialism, his Cold War-era successor, Deng Xiaoping, recognized an opportunity in increased access to Israeli high-tech weaponry via improved diplomatic ties and subsequently liberalized trade relations (Gottesman 2015). Indeed, his view may have been the spark that led to the curiosity held by many of today's Chinese investors regarding Israeli innovative technology. In turn, to show its support for China, Israel ceased all weapons sales to Taiwan in the year 1986 and thus, a solid and discrete new business alliance was formed.

Perhaps most interestingly, a common work ethic and ancient ties to their respective cultures seem to have played a primary role in shaping this blossoming new relationship between China and Israel. In particular, Israel's alias as the 'startup nation' seems to not only have piqued the intrigue of many Chinese investors but has also contributed to the growing number of Chinese learning centers established recently in Israel to help the former study new cow milking, water sanitation, and various other techniques to improve China's currently struggling agricultural market (Israel and China: The Odd Couple 2015). In general, the branding consensus among the Chinese portrays Israel and the Jews as a smart people, and every day, news of innovative technology reaches China's investors and various other types of professional citizens within the country via social media. Moreover, several leading Chinese investors have taken interest in the fact that many products developed by the world's top technology firms, such as Google and Intel, originated in Israel. Ronnie Chan, Chairman of Chinese holding company Hang Lung Group, elaborates on plans for Sino-Israeli investment in technology: "Some companies can set up research and development centers here, some can bring Israeli companies to China, some can open up the Chinese market for Israeli companies. I have no idea where this will lead" (Cohen 2013).

Promising as it may appear, China's solidifying commercial relations with Israel also pose a risk of alienating the former's primary source of oil: Iran. While China's interest in Israeli high-tech firms remains unique compared to its energy-based interest in most other Middle Eastern countries, Israel could see China surpass the U.S. in terms of its largest export market. With Israeli exports to China having reached over US \$3 billion, Chinese investors are considering a variety of sectors in the Jewish State, including communications, water treatment, medical equipment, and renewable energy, in addition to agriculture and high-tech (Meidan 2014). In this light, resuming official military cooperation between these two nations becomes a question of whether adding military defense trade to their already fast growing commercial ties will render a profit worthy of risking both China's relationship with the oil-rich countries in the Middle East as well as Israel's alliance with and financial aid from the United States.

Perhaps it was this need to safeguard diplomatic relations alongside business ties that contributed to the appointment in 2012 of Israel's current ambassador to Beijing, Matan Vilnai. As a former commander in the Israel Defense Forces, Vilnai now works alongside Israeli Defense Minister Ehud Barak to both protect peaceful political ties with the Chinese as well as emphasize the significant role of defense technology in Israeli exports to China (Kumaraswamy 2012). Particularly in the absence of a tense history or pro-Palestinian, anti-Israel sentiment as exists today among many European nations regarding Israel, China has a wealth of opportunity to offer the Jewish State. Indeed, with U.S. hegemony on the decline and subsequent American scrutiny of Sino-Israeli relations coupled with suspected pro-Muslim bias from President Barack Obama, investment in manufacturing defense technology remains enticing. Israel could stand to gain a great deal from covertly replacing its Western trading partners in the EU and the U.S. with the rising giant to the East.

#### INDIA AND ISRAEL: STRATEGIC ALLIES AGAINST FUNDAMENTALISM

Since the election of Hindu nationalist Narendra Modi as the current Prime Minister of India in May of 2014, Israeli Prime Minister Benjamin Netanyahu and his cabinet have capitalized on the surge in Indian hawkishness toward the security threat with Pakistan to re-enforce plans for an Indo-Israeli bilateral trade agreement, with particular emphasis upon exports of high-tech defense technology. Already, the past decade has seen Israel nearly catch up with Russia as India's second largest defense supplier, hitting a record of US \$10 billion in high-tech military exports (NP 2012). In fact, Israel now overtakes Russia when it comes to specific sectors within aerospace defense technology. In an interview with Indian Aerospace and Aviation professional, Parag Patkar, UAVs were revealed as being of particularly valuable quality to India:

“India lacks expertise in a few areas that Israel Aerospace fulfills. The main area is Air Defense, but there are a few others like sea-launched anti-ballistic missiles, Unmanned Aerial Vehicles / Drones. But where Israel has a lock on Indian Defense purchases is in Air Defense Technologies - AWACS (Airborne Radar System), Ground-based Radar, anti short-range missile systems (components of the Iron Dome), and a large range of electronic warfare equipment. The other area where India prefers Israeli tech is in aerial reconnaissance and surveillance. For these areas, India relies on Israeli tech versus Russian tech, because Israeli tech is superior.” (Patkar 2015)

The fact that an ever-expanding market such as India now depends strongly upon Israel for weaponry—in some ways, more so than its long-time supplier, Russia—clearly indicates a sense of strategic alliance between the two nations as well as Indian acknowledgment of the invaluable quality of Israeli aerial technology. Simply stated, India recognizes a superior manufacturer and a kindred spirit in Israel since both experience perpetual terrorism at the hands of hostile neighbors who adhere to Islamic radicalism. The fact is, India and Israel need one another. While Israel seeks to replace trade revenue losses from its recent stagnation in commercial relations with Turkey, India requires the most cutting edge defense technology available in their struggle over the Kashmir border with Pakistan, which many have deemed the bloodiest border in the world. In particular, Israel Aerospace Industries has offset prices on certain drone and missile

exports to India in order to persuade Indian consumers to choose Israeli products over those of American and Russian competitors (Opall-Rome 2015). Already, Israeli producers have an advantage in terms of air defense technology, as the Indian Army has made major use of such weaponry in defending its border with Pakistan. Moreover, not unlike in China, Israelis enjoy a reputation in India as world-class scientists, further solidifying the likelihood of Indian reliance upon Israeli technology. Especially now that India has turned its attentions toward Iran as another potential adversary, Indian military officials are increasingly interested in Israel's aerial technology, such as Israeli Heron UAVs<sup>2</sup> and Barak-1 missiles (Ningthoujam 2014).

Indeed, while Israeli exporters will likely always face competition from fellow international producers of military technology as well as opposition from protectionist forces within India that prefer domestic procurement, the value of strengthening Indo-Israeli trade relations are undeniable and stem largely from strategic origins. In casting a glance at history, Muslim Pakistan's hostility toward India despite Indian support for Palestine since the founding of Israel in 1948 has gradually urged many Indian elites to soften in their stance toward the Jewish State (Desai et al. 2008). Therefore, such an alliance in the face of similar conflicts with practically ideologically identical hostile opponents should come as little surprise.

In fact, India now serves as the largest export market for Israeli arms; they have even expressed interest in purchasing – or at the very least, studying the development of – Israel's renowned Iron Dome missile defense technology (Parashar 2014). Even though both China and India view Israel as a force to be reckoned with in terms of technology innovation and defense, bilateral relations with India seem closer on the horizon, particularly provided China's precarious situation with safeguarding access to Iranian oil. India, on the other hand, has comparatively little to lose, weak as its reputation is among the community of Islamic nations provided the current situation in Kashmir. Meanwhile, Israel would do well to use trade revenue from such military exports to India as another source of funding for manufacturing its own weapons.

#### THE U.S.: A FADING SPARK

At last, we turn to what many would consider the longtime best friend of Israel – the United States. In the past 20 years, exports from the U.S. to Israel have increased from US\$2.5 billion to US\$11.3 billion, with a large chunk of products flowing into Israel's military aircraft supply (The U.S.-Israel FTAA 2011). Moreover, commitments between these two nations have narrowed over the years from military financing to joint research development in counterterrorism and security initiatives (U.S. Relations with Israel 2015). At this point in time, Israel has begun looking for back-up trade partners and strategic allies, should the U.S. desire to appease Islamic countries in the Middle East for oil access during times of recession surpass their dedication to shared American-Israel security concerns. Might expanding trade with China and India mean adding two markets to Israel's seemingly ever-successful commercial relationship with the U.S.? Perhaps not. Israel's courtship of new business prospects in Asia could reflect less an attempt to expand trade and more of an effort to replace what the Israelis fear may be weakened loyalty on America's part. As the international community grows increasingly critical of Israeli policy toward the Palestinians and specifically scrutinizes the use

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<sup>2</sup> Unmanned Aerial Vehicle; drone

of U.S.-manufactured weaponry against civilians in the Gaza Strip, Israel fears that its status as top recipient of U.S. foreign aid and military exports (Hartung 2002) might be in question. Furthermore, provided the recent election of reformist Hussein Rouhani to the Iranian presidency and subsequent plans voiced by U.S. President Barack Obama to normalize trade relations with Iran in the near future, Israel might envision the U.S. as potentially facing the same challenge as China regarding choosing sides when it comes to the option of forming an alliance with either Iran or Israel. If anything, the recent nuclear deal signed between Iran and the United States has caused Israeli Prime Minister Netanyahu and his government the most skepticism yet regarding America's commitment to Israel's security.

## CONCLUSION

Essentially, what we are witnessing these days between Israel and its long-time ally, the U.S., is a game in which political support often yields economic profit. Since America's signing of the Iran Nuclear Deal and the dire impact of the 2011 U.S. recession, the Jewish State has turned a cold shoulder to Obama and begun looking elsewhere for alternative commercial and strategic connections. However, despite China and India both serving as economically promising prospects for major trade partners in defense technology with Israel, each nation presents a slightly different case for supporting increased business relations. China, on the one hand, has enjoyed subtle yet steady trade with Israel ever since the beginning of the Cold War. Indeed, with Israeli trust in the U.S. quickly diminishing, the powerful Chinese market will likely appear far brighter and China will be hard pressed to turn away an influx of affordable and cutting edge Israeli agricultural and military technology for Iranian oil, access to which its trade with the Jewish State thus far has hardly endangered. It seems that both China and Israel can only gain from striking official commercial ties, especially considering how successful Chinese investment in Israeli high-tech has proven thus far.

Continuing on the topic of attracting new buyers, Israel's lowering of prices on military exports to India also speaks volumes in terms of efforts to hasten stronger trade ties with the Indian people, whom many Israelis view as facing challenges of Islamic terrorism that mirror those faced by the Jewish State. Particularly with the rise of a more Hindu nationalist leadership, Indian government is less preoccupied with appeasing its resident Muslim community and more concerned with accessing the necessary weaponry to defend its border against Pakistani militants, a feat in which Israeli defense innovation plays a major role.

Whether Israeli exports flow mostly into the agriculture or defense sector, the trend remains that as Israel realizes more trade with these two Asian markets, financial support from the U.S. will be rendered less crucial. By and large, while Israel will unlikely completely sever its cord with the United States, the age of Israeli-American dominated economic cooperation may soon encounter a rival in blossoming multilateral trade among Israel, China, and India.

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# **Sub-Saharan Africa: The New Frontier for International Investments**

AKUA ANYEI OBENG<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*According to International Monetary Fund Regional Economic Outlook of 2015, regardless of weaker economic situations, sub-Saharan Africa continues to demonstrate that, it is stronger than the North African countries. This expansion is attributed to the allocation of new resource production, favorable domestic conditions, large infrastructures investments and a supportive hand from China and India.*

*This paper analyzes the optimistic prospects for sub-Saharan African countries. It adopts a descriptive and data analysis methodology to examine risks and opportunities at both macroeconomic and political level. It concludes by proposing new policies of doing business to eliminate cultural, economic and political barriers.*

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<sup>1</sup> Address correspondence to Akua Anyei Obeng, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd., Laredo, Texas 78041, USA. E-mail: [akuaanyeiobeng@dusty.tamtu.edu](mailto:akuaanyeiobeng@dusty.tamtu.edu)

# More Evidence on Corruption and Gender: Evidence from Firm-Level Surveys

GEORGE R.G. CLARKE<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

## I. INTRODUCTION

Are female managers less likely to pay bribes than male managers? And if they are less likely, how and why do they avoid doing so? Both of these questions are important. If female managers are less likely to pay bribes, promoting gender equality and encouraging female participation in business might reduce corruption. But this will, in part, depend on how and why they avoid paying bribes. If, for example, they avoid paying bribes because they do not have the connections that allow them to participate in corruption networks, their lower propensity to pay bribes might disappear as their participation in politics and business increases (Rivas, 2013).

Some evidence suggests that women are more averse to corruption than are men. One important piece of evidence is that corruption is lower in countries where women are better represented in government and the work force (Dollar and others, 2001; Swamy and others, 2001). Although this might be because systems such as liberal democracy that promote gender equality tend to be less corrupt (Sung, 2003), it could also be because increased female participation in government reduces corruption.

Micro-level evidence also supports the idea that women are more averse to corruption than are men. First, women appear to be less tolerant of corruption than men are. Women in many countries are less likely to say that taking bribes is acceptable than men are (Swamy and others, 2001). Second, people often believe that female public officials are more honest than male public officials. Both male and female students in Spain, for example, agreed that female public officials are less likely to take bribes than male public officials (Rivas, 2013). Similarly, taxi drivers in Colombia reported that female transit officers were less likely to accept bribes than male officers were (Lambsdorff and Fink, 2006). Because of this belief, officials in Lima, Peru and Mexico City took ticket writing authority from male traffic officers and gave it to female officers to try to reduce corruption (Swamy and others, 2001). Third, women are less likely to report that they have been involved in corrupt acts than men are. Mocan (2008), for example, finds that women are less likely to report that government officials had requested bribes from them in the previous year.

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<sup>1</sup> Address correspondence to George Clarke, BBVA/Compass Bank Group Distinguished Chair and Associate Professor of Economics, Division of International Banking and Finance Studies, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Boulevard, Laredo, Texas 78041, USA.  
E-mail: [george@grgclarke.com](mailto:george@grgclarke.com)

The data used in this paper are from the Enterprise Surveys (<http://www.enterprisesurveys.org>), The World Bank. Responsibility for all errors, omissions, and opinions rests solely with the author.

Fourth, experimental studies also suggest women are less likely to engage in corrupt behavior in laboratory settings (Alatas and others, 2009; Frank and others, 2011).

These results suggest that promoting gender equality in government and business might reduce corruption. One concern, however, is that even if women, on average, are less corrupt than men, women who become high-level managers or government officials might not be representative of women in the population as a whole. Discussing the experimental evidence on corruption, Frank and others (2011) argue (p. 68):

*But what about external validity: do these results hold for real decision makers in the real world. For instance, this would not be the case if women in the highest positions behave, owing to indoctrination or self-selection, like men in every relevant aspect. Women's resistance towards corruption may disappear if their career forces them to engage in reciprocal exchange.*

This paper's first contribution is to provide additional evidence that female managers are less likely to engage in corrupt behavior than are male managers. Using data from a large cross-country dataset, we show that female managers are less likely to report that firms pay bribes than similar men are. This result suggests that women who self-select into management might also be less tolerant of corruption than male managers are. This result is consistent with results from the country of Georgia (Swamy and others, 2001). That is, our results confirm that the observed reluctance of female managers to pay bribes—or at least to report that they pay bribes during surveys—holds across many low and middle-income countries.

The paper's second contribution is to explore possible reasons for the difference between male and female managers' experience with corruption. We show that female managers are less likely to interact with government officials than male managers. Firms with female managers are less likely to apply for construction and import licenses, less likely to get new utility connections, and less likely to bid for government contracts than are firms with male managers. Many of these transactions are at least partly voluntary on the part of the firm. For example, firms can avoid getting construction licenses or new utility connections by purchasing finished premises. This suggests that female managers might avoid paying bribes by avoiding interactions with government officials.

In contrast, we find less evidence that female managers are less likely to pay bribes than male managers during specific transactions when they occur. Female managers who interacted with officials during the transactions listed above were no more or less likely to report that bribes were requested or expected during the transactions. This suggests that female manager's lower propensity to bribe might be mainly due to female managers avoiding interactions with government officials rather than that they refuse to pay bribes when they are demanded. This could be because they avoid interacting with public officials specifically because they want to avoid bribe demands. But it could also be because they feel they lack the connections to successfully navigate corruption networks.

## II. DATA

We use data from firm-level surveys from the World Bank's Enterprise Surveys (WBES). The surveys cover private, formal firms in manufacturing, retail and wholesale trade, and other services in developing countries. The survey excludes firms that are majority government owned. Because the survey uses lists obtained from government agencies for the sample frame, the survey does not include informal or unregistered firms. The surveys include questions on the business environment, including the firm's experience with regulation and corruption, firm performance, and firm characteristics.

Although the WBES program started in the early 2000s—and the questionnaire was standardized across regions in 2006—the question on female managers was added in 2008. Because female managers are the focus of the paper, we only include surveys completed in 2008 or later. The resulting data set is, however, quite large—we use data for over 60,000 firms from 132 surveys in 102 countries (see Table 6 in the on-line Appendix).

The WBES includes several questions about corruption. The most general question asks managers whether they believe that other firms like theirs pay in bribes to “get things done.” The question asks about petty corruption—payments to officials for things like getting licenses, permits and to deal with inspections. The question reads:

*We've heard that establishments are sometimes required to make gifts or informal payments to public officials to “get things done” with regard to customs, taxes, licenses, regulations, services etc. On average, what percent of total annual sales, or estimated total annual value, do establishments like this one pay in informal payments or gifts to public officials for this purpose? (World Bank, 2007)*

To allow managers to report corruption without incriminating themselves, the question is asked indirectly about what the manager thinks other managers do. When we discuss most of our results, however, we will follow the majority of other studies in assuming the manager is thinking about his or her own firm when answering the question.<sup>2</sup> This assumption can be justified in two ways. First, managers might recognize that the indirect question is meant to protect them but that it is really asking about what they do. They might, therefore, answer the question thinking about their own actions (Johnson and others, 2002). Even if this is not the case, however, managers who pay bribes might be more likely to believe that others do also. Previous studies have found a ‘false consensus effect’ where people tend to believe that others act and think like themselves even when others do not (Ross and others, 1977). If this holds in this case, people who pay bribes might be more likely to believe that others also pay bribes. We will explore this in greater detail in the section on robustness checks.

The other questions on corruption are asked more directly. Managers are asked whether they have applied for specific licenses or utility connections in the past two years and whether they have been inspected or visited by tax officials in the past year. For each transaction that they have been involved with, they are asked whether a bribe was requested or expected during the

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<sup>2</sup> See, for example, Clarke and Xu (2004); Johnson and others (2002), and Svensson (2003).

transaction. Because the question does not directly ask whether a bribe was paid, managers can answer without incriminating themselves. For example, the questions about operating licenses are:

*Over the last two years, did this establishment submit an application to obtain an import license? (World Bank, 2007).*

And

*In reference to that application for an import license, was an informal gift or payment expected or requested?*

As well as these two questions, there is an additional question that asks whether the firm has attempted to secure a government contract within the past 12 months. Unlike the previous questions, managers are not asked whether a bribe was requested during the process. The question is:

*Over the last 12 months, has this establishment secured a government contract or attempted to secure a contract with the government? (World Bank, 2007).*

In addition to the questions on corruption and interactions with the government, managers are also asked several question about their firm. These include whether the firm is foreign-owned, partly government owned, the size of the firm (number of workers), how fast the firm is growing (sales growth), the firm's age, whether the firm exports, and the firm's sector of operations. We measure firm size using permanent employees rather than total employees because data on temporary employees is often missing. Summary statistics for the main variable are included in an on-line appendix (see Table 7).

In addition to the questions on corruption and interactions with the government, managers are also asked several question about their firm. These include whether the firm is foreign-owned, partly government owned, the size of the firm (number of workers), how fast the firm is growing (sales growth), the firm's age, whether the firm exports, and the firm's sector of operations. We measure firm size using permanent employees rather than total employees because data on temporary employees is often missing. Summary statistics for the main variable are included in an on-line appendix (see Table 7).

### III. PROBABILITY OF PAYING BRIBES

The first question that we ask is how female and male managers answered the question on the amount of bribes that firms like theirs pay. Although the question asks about firms like the manager's firm rather than the manager's firm, we will assume that the manager is talking about their own firm when they answer the question for ease of exposition and following past studies. We discuss this assumption in the previous section.

The dependent variable is a limited dependent variable indicator; most managers answer that they pay nothing. Although this might suggest that a Tobit or similar model is appropriate, previous studies have found that different things affect the firm's propensity to pay bribes and the amount that firms pay in bribes (Malomo, 2013; Svensson, 2003). We, therefore, first model the firm's propensity to pay bribes and then model the amount that the firm pays. We assume that:

$$\text{Propensity to pay bribes}_{ij} = \alpha_j + \beta \text{Manager is Female}_{ij} + \gamma x_{ij} + \varepsilon_{ij}$$

The equation shows firm  $i$  in country  $j$ 's propensity to pay bribes. Because we cannot observe the firm's propensity to pay bribes, we assume that the firm pays bribes if its propensity to do so is greater than some level that we normalize to 0. This implies:

$$\text{Firm pays bribes}_{ij} = \begin{cases} 1 & \text{if } \text{Propensity}_{ij} > 0 \\ 0 & \text{if } \text{Propensity}_{ij} < 0 \end{cases}$$

We assume that the error term,  $\varepsilon_{ij}$ , is normally distributed and so estimate the model as a Probit model.

The variable that we are most interested in is the coefficient on the dummy variable indicating the manager is female. If female managers are less likely to pay bribes, which would be consistent with results from previous studies, the coefficient will be negative.

The regression includes several control variables. First, we include a full set of country-year dummies to control for things that affect firms' propensities to pay bribes at the country level. For example, firms might be more likely to pay bribes in countries with weak institutions or governance. If corruption is lower and women have better opportunities in countries with stronger institutions, as suggested by Sung (2003), we might find a spurious correlation between female managers and corruption if we do not control for institutional differences between countries. Because we include separate dummies for each survey in countries with multiple rounds of surveys, these dummies also control for differences in corruption over time within individual countries.

Second, the regression include several firm-level control variables. These include controls for the size of the firm, the age of the firm, the firm's sector of operations, and firm ownership. Large firms and partly government-owned firms, for example, might pay less in bribes if managers of these firms are better connected or if they can lobby government more effectively than small firms can. Foreign owned firms might be less likely to pay bribes than domestic firms because they worry about bad publicity or even prosecution in their home countries if they are caught paying bribes. Exporters, who will often have to deal with customs official more frequently than non-exporters might also be more likely to pay bribes. Finally, regulatory differences across sectors might mean that opportunities for paying bribes differ across sectors.

As noted above, the survey also asks about how much the firm pays in bribes. Because firms' decisions about how much to pay appear to be affected differently than firms' decisions whether to pay bribes, we model these two decisions separately. Although a Heckman two-step model

would allow the errors, it is difficult to find plausible exclusion restrictions. That is, most things that affect the propensity to pay bribes might also affect the amount of the bribe. We therefore estimate the model using ordinary least squares (OLS).

The dependent variable is the natural log of the amount of the bribe measured as a percent of sales. The model is therefore:

$$\ln(\text{bribe}_{ij}) = \alpha_j + \beta \text{Manager is Female}_{ij} + \gamma x_{ij} + \varepsilon_{ij}$$

We include the same control variables,  $x_{ij}$ , as in the previous model and one additional variable. As noted in the previous section, managers can answer the question about how much they pay either as a percent of sales or in local currency. Since the survey also includes sales in local currency, it is possible to all answers into common units (i.e., percent of sales or local currency) and pool the two sets of answers into a single regression. In practice, however, Clarke (2011) shows that managers who answer as a percent of sales report paying about 4 to 15 times more in bribes than managers who answer in local currency.<sup>3</sup> We, therefore, include an additional variable to control for how the manager answered the question. The dummy is equal to one if the manager answered in local currency and is equal to zero if the manager answered as a percent of sales.

### *Econometric results*

Results from the estimation are shown in Table 1.

*Female Managers.* Female managers are less likely to say that firms like theirs need to pay bribes to get things done after controlling for other things that might affect whether firms pay bribes (see Table 1). Although the coefficient on the dummy variable indicating that the top manager is a female is negative and statistically significant, the difference between firms with male and female managers is modest. Firms with female managers were on average about 2 percentage points less likely to report that bribes were needed to get things done than firms with male managers (14.4 percent compared with 16.4 percent).<sup>4</sup> If, as most previous papers assume, managers answer the question thinking about their own behavior, this suggests that female managers might be less likely to pay bribes than male managers.

Female managers who reported that bribes were needed to get things done did not, however, report paying less in bribes than male managers. In the second regression, which is only calculated for firms that paid bribes, the coefficient on the dummy variable indicating that the manager is female is negative but statistically insignificant.

*Other Firm Characteristics.* Coefficients on several of the control variables are also statistically significant. Large firms are less likely to report that bribes are needed to get things

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<sup>3</sup> Malomo (2013) finds similar results using data from a different Enterprise Survey for Nigeria.

<sup>4</sup> Average probabilities for female managers were calculated by first setting the dummy variable equal to one for all firms, calculating the probability that the firm would say 'yes' and then averaging the probabilities over all firms. A similar procedure, with the dummy set to one, was used for the average probability for male managers.



done and report paying less in bribes as a percent of sales than smaller firms do. This could be because large firms tend to be more heavily regulated than smaller firms in many countries.<sup>5</sup> Similarly, firms that export and fast-growing firms are also more likely to report that bribes are needed than are other firms. This could be because these firms tend to interact more with regulators: exporters, for example, might need to get export and import license sand growing firms might, for example, need to get construction permits as they expand. But it might also suggest that bureaucrats target these firms—perhaps because managers of these firms are thought to be more able to pay bribes. Interestingly, however, managers of exporters and fast growing firms reported paying less in bribes than managers of other firms when they do pay bribes.

*Answering in local currency vs. percent of sales.* Managers can answer the question about how much they pay in bribes in either local currency or as a percent of their sales. Although, in principle, it shouldn't matter how the manager answers the question, it does seem to matter in practice. Earlier studies have found that managers who answer in local currency report far lower bribes than managers who answer as a percent of sales (Clarke, 2011; Malomo, 2013). Moreover, this does not appear to be due to observable differences between firms that report bribes in local currency and firms that report bribes as a percent of sales (Clarke, 2011). We, therefore, include a dummy variable indicating how the manager answered the question as an additional control variable. The results from the analysis in this paper are consistent with this; managers who report bribes in local currency report far lower bribes than managers who report bribes as a percent of sales. Managers who report bribes in local currency report bribes that are about 95 percent lower than managers who report bribes as a percent of sales.

#### IV. INTERACTIONS WITH GOVERNMENTAL OFFICIALS

The previous results suggest that female managers are less likely to pay bribes than male managers—or at least are less likely to believe that other managers pay bribes. We explore this further by asking why female managers are less likely to pay bribes than are male managers. One possible reason is female managers might avoid interacting with corrupt officials when possible. To see whether this is the case, we run some additional regressions where the dependent variables are dummy variables indicating that the firm has recently: tried to get a new water, fixed-line phone or power connection; has applied for a construction, operating or import licenses in the past two years; has met with tax officials in the past year; or has tried to secure a government contract in the past year. The model is:

$$\text{Propensity to interact}_{ij} = \alpha_j + \beta \text{Manager is Female}_{ij} + \gamma x_{ij} + \varepsilon_{ij}$$

As before, we cannot observe the firm's propensity to interact with government officials. We, therefore, assume the firm do so if its propensity to do exceeds some critical level, which we have normalized to zero. That is:

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<sup>5</sup> Several papers have found that managers of large firms are more likely to say that different aspects of regulation are serious problems than are small firms. Gelb and others (2006) and Pierre and Scarpetta (2006), in particular, show labor regulation concerns managers of large firms more, not less, than it concerns other managers.

$$\text{Firminteracts}_{ij} = \begin{cases} 1 & \text{if } \text{Propensity}_{ij} > 0 \\ 0 & \text{if } \text{Propensity}_{ij} < 0 \end{cases}$$

We assume that the error term is normally distributed and, therefore, estimate it using Probit estimation. The control variables are the same as in the previous model.

It is important to note that many of the transaction are voluntary to a greater or lesser degree. Firms could avoid getting new utility connections or construction licenses, for example, by buying or leasing existing properties. In other cases, firms might avoid government interactions by remaining partly informal. Finally, firms might hire agents to navigate the bureaucracy on their behalf and, in so doing, avoid the need to pay bribes directly. Looking at people applying for driver's licenses in India, for example, Bertrand and others (2007, p. 1641) find "no evidence of direct payments to bureaucrats... extralegal payments are mainly fees to 'agents', professionals who assist individuals in the process of obtaining their driver's licenses."

### *Econometric results*

**Female Managers.** The main variable of interest is the dummy variable indicating that the manager is a female. In five of the eight regressions, the coefficient on the dummy variable indicating that the manager is female is negative and statistically significant (see Table 2). In the remaining three regressions (water connections, construction licenses and operating licenses), the coefficient is statistically insignificant. This suggests that female managers are less likely than male managers to interact with government officials, potentially explaining why female managers are less likely to pay bribes.

Although the coefficients are often statistically significant, the coefficients mostly suggest that the difference between male and female managers is small (see Table 3). In most cases, the probability that a female manager interacts with officials is only about one percentage point less likely to interact with government officials than male managers. There are two exceptions to this: female managers were about 2.6 percentage points less likely to apply for an import license and were about 3.7 percentage points less likely to bid on government contracts. Given that only 13 percent of firms with male managers applied for import licenses and only about 20 percent bid on government contracts over the relevant periods, these differences are large.

The relatively minor difference suggests that these differences alone are unlikely to explain the difference between male and female managers with respect to bribes. To see whether this is that case, we add the regulatory variables to the regressions for whether bribes are needed to get things done and the amount of the bribes (see Table 1). In the first regression, the coefficients on the dummy variables are consistently positive and statistically significant; managers who interact more with government officials are more likely to pay bribes. In contrast, the coefficients are mostly statistically insignificant in the second regression indicating that firms involved in these transaction do not report paying more in bribes than other firms.

The transactions have a large effect on the likelihood that the manager reports that bribes are needed. Firms who applied for utility connections and licenses were about 1.4 to 3.3 percentage points more likely to say bribes were needed to get things done than managers who had not. Given

that only about 15 percent of managers not involved in transaction reported that bribes were needed, these differences are large. The effect is even larger for firms that have bid on government contracts; firms that had bid on government contracts in the past year were about 7 percentage points more likely to say bribes were needed to get things done than firms that had not bid. The large difference between firms that bid on government contracts and firms that do not is interesting; as noted above, the question does not specifically refer to bribes to win contracts. There are two possible explanations for this. First, it is possible that firms that bid on government contracts are more corrupt than other firms. If only corrupt firms can compete for government contracts, the same firms might be more likely to pay bribes in other situations. Another possibility is that managers do not carefully distinguish between bribes offered for difference purposes and, therefore, include these when they answer the question on whether bribes are needed to get things done.

Although the dummy variables indicating that the firm was involved in transactions appear to affect the likelihood that the manager reports that bribes are needed, including them does not greatly affect results for female managers. The coefficient on the dummy indicating the manager is female remains statistically significant and is about the same size as before. One possible explanation is that although the list of transactions is long, it is not exhaustive. It omits, for example, health and safety inspections, export licenses, and interactions with law enforcement. It is possible that female managers are also less likely to engage in these and other transactions. Another possible explanation is that female managers are less likely to pay bribes during interactions than other firms. We explore the second possibility in the next section of the paper.

*Other variables.* Several of the other variables show consistent patterns across the different regressions. Large firms are more likely to interact with government officials than small firms; the coefficient on number of workers is positive and statistically significant in all regressions. Older firms are less likely to apply for utility connections. Although this might be because older firms are less likely to need new connection if they already have the premises they need, they were more likely to apply for construction permits than younger firms. Older firms are more likely to bid on government contracts than younger firms, perhaps because they are better connected. Foreign-owned firms were less likely to interact with government officials than domestic firms. The coefficients on foreign ownership are statistically significant and negative in 7 of 8 regressions. The one exception is import licenses: foreign-owned firms were more, not less, likely to apply for import licenses than domestic firms. This might be because foreign-owned firms need to import inputs or equipment from their parent company. Finally, fast growing firms were more likely to apply for utility connections and licenses than slow growing firms.

## V. PAYING BRIBES DURING SPECIFIC TRANSACTIONS

Although female managers are to be less likely to interact with government officials than male managers, this does not appear to fully explain why female managers are less likely to report that firms like theirs pay bribes. Even after controlling for these interactions, female managers are less likely to report that firms like theirs pay bribes than are male managers (see columns 3 and 4 in Table 1). One possible explanation is that the list of possible interactions with government officials

is far from exhaustive. It might be that if we had a more complete list of interactions, the coefficient on female managers might become statistically insignificant.

A second possible explanation is that female managers might also be less likely to pay bribes during specific interactions when they do occur. To see whether this is the case, we regress the likelihood that bribes were requested or expected during each of the interactions with the government from the previous section on the dummy variable indicating that the manager is female and other control variables. Because the bribe question was not asked for the question on government contracts, this variable is excluded from the analysis. The model is:

$$\text{Propensity to pay bribes during transaction}_{ij} = \alpha_j + \beta \text{Manager is Female}_{ij} + \gamma x_{ij} + \varepsilon_{ij}$$

Because we cannot observe the firm's propensity to pay bribes, we estimate the model with a dummy variable that is equal to:

$$\text{Firm paid bribe during transaction}_{ij} = \begin{cases} 1 & \text{if } \text{Propensity}_{ij} > 0 \\ 0 & \text{if } \text{Propensity}_{ij} < 0 \end{cases}$$

We assume that the error term is normally distributed and, therefore, estimate it using Probit estimation. The control variables are the same as in the previous model.

### *Econometric Results*

The results are shown in Table 4.

*Female managers.* The coefficients on the dummy variable indicating the top manager is female is statistically insignificant in six out of seven regressions. Moreover, the statistically insignificant coefficients are positive, not negative in three out of the six regressions. In the final regression, the coefficient is negative and statistically significant, suggesting that female managers might be less likely to pay bribes than male managers when getting an electricity connection. These results suggest that there is only weak evidence that female managers are less likely to pay bribes during these specific transactions.

*Other Variables.* There are few consistent results in the other regressions. Perhaps the most consistent results are that large firms are less likely to pay bribes than small firms and exporters are more likely to pay bribes than non-exporters during specific transactions. The coefficients on firm size are negative in six of seven regressions and are statistically significant in three of these. Similarly the coefficient on exports is positive in six of seven regression and are statistically significant in four. Finally, the coefficient on foreign ownership is negative in all seven regressions, but is statistically significant in only two.

## VI. CONCLUSIONS

Previous studies have found women appear to be more averse to corruption than are men. Corruption appears to be lower in countries where women are better represented in the work force and in government (Dollar and others, 2001; Swamy and others, 2001). Women are less likely to say that accepting bribes is acceptable (Swamy and others, 2001) and that public officials have requested bribes from them (Mocan, 2008). And in experimental settings where players, who are mostly students, play the parts of firms and public officials, women are often less likely to engage in corruption than are men. For example, female players in Australia were less likely to offer or accept bribes and more likely to punish players who offered bribes than men were (Alatas and others, 2009).<sup>6</sup> And women offered lower bribes than did men in an experiment in Spain (Rivas, 2013).

This paper contributes to the literature on gender and corruption in two ways. First, using firm-level data from over 100 low and middle-income countries, we find that female managers were less likely to report that firms like theirs needed to pay bribes to get things done than male managers were. This is consistent with results from a single country study (Georgia) that found that female managers reported that bribes were needed less frequently than male managers did (Swamy and others, 2001). This is interesting because, as noted by Frank and others (2011, p. 68), even if women are less corrupt on average, women in high level positions might behave more like men and that, therefore, their “resistance towards corruption might disappear if their career forces them to engage in reciprocal behavior.”

Second, our results suggest that female managers might avoid bribes by avoiding interacting with public officials rather than refusing to pay bribes when they do interact with the officials. We find that female managers were significantly less likely to have applied for utility connections and some types of licenses, were less likely to attempt to secure government contracts, and were less likely to have met with tax officials than male managers were. They might do this by avoiding optional interactions with public officials. It is possible they do this because they are less likely to be part of networks that allow them to successfully engage with public officials (Rivas, 2013). Female managers, however, were no more or less likely to report officials requested bribes during these transactions when they occurred. The coefficient on the gender dummy was consistently statistically insignificant in regressions where the dependent variable indicated a bribe was requested during these transactions.

Although the results are consistent with the idea that female managers are less likely to pay bribes, alternative explanations are possible. First, because the question is asked indirectly about ‘firms like this one’ rather than about the manager’s own firm, it is possible that female managers answer ‘no’ because female managers believe other managers pay bribes infrequently. Swamy and others (2001) used a similar indirect question—managers were asked “how frequently do the officials providing the service require unofficial payments?” As discussed earlier, most papers assume managers either answer these questions thinking only about their own experiences or that managers who pay bribes tend to project their behavior onto others (i.e., they assume that others behave like they do). It is, however, possible that the negative correlation between gender and bribe giving might be the result of female managers underestimating –or male managers

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<sup>6</sup> This was not, however, the case in India, Indonesia, or Singapore.

overestimating—the prevalence of corruption among other managers rather than that female managers are less likely to pay bribes.

Another possibility is that female managers might be more likely to misreport information than male managers. If female managers are more likely to lie than male managers, we would see a negative correlation between gender and reported bribe payments even if there was no difference in actual behavior. This could be the case if women were, on average, more concerned about being seen as corrupt. A similar problem could also occur in corruption experiments. Since the players know that their actions are being observed, they might behave differently than if they believed they were not being observed. If female participants were, on average, more concerned about being seen as corrupt, they might behave more differently in experimental settings than they would in real life than men do.

Our results do not provide any much insight into why female managers are less likely to report paying bribes than are male managers. For example, they could be due to women being intrinsically more averse to paying bribes or they could be the result of cultural forces. Similarly, the results could be due to women having higher ethical standards, being more risk averse, being more concerned with the common good, or being less likely to have access to networks that facilitate corruption. It seems less likely that our results are due to women having greater opportunities in liberal democracies as suggested by Sung (2003). As noted, our regressions include country-year fixed effects meaning that we are comparing women with men in the same country in the same year. That is, our results suggest that female managers are less likely to report paying bribes than similar men in the same countries. In this respect, the results are consistent with single-country field studies and experiments that have found that women are less likely to engage in corrupt transactions.

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VII. TABLES

**Table 1:** Effect of gender of manager on bribe payments

Column	(1)	(2)	(3)	(4)
<b>Dependent Variable</b>	Firm pays bribes [dummy]	Amount of bribes [% of sales, nat.log]	Firm pays bribes [dummy]	Amount of bribes [% of sales, nat. log]
<b>Country-Year Dummies</b>	Yes	Yes	Yes	Yes
<b>Observations</b>	35,693	5,720	23,025	3,645
<b>Gender of manager</b>				
Top manager is female [dummy]	-0.098*** (-3.91)	-0.050 (-0.84)	-0.097*** (-3.04)	-0.052 (-0.73)
<b>Firm Characteristics</b>				
Number of workers [nat. log]	-0.014* (-1.95)	-0.220*** (-12.82)	-0.070*** (-7.27)	-0.239*** (-11.28)
Age of firm [nat. log, years]	-0.019 (-1.33)	-0.003 (-0.10)	-0.049*** (-2.74)	-0.002 (-0.05)
Firm exports [dummy]	0.196*** (8.72)	-0.102** (-1.98)	0.192*** (6.63)	-0.048 (-0.76)
Firm is foreign-owned [dummy]	-0.091*** (-2.71)	-0.033 (-0.42)	-0.057 (-1.41)	-0.020 (-0.23)
Firm is partly government owner [dummy]	-0.060 (-0.98)	0.065 (0.49)	-0.087 (-1.19)	-0.091 (-0.64)
Growth of sales [percent]	0.001** (2.06)	-0.003*** (-4.56)	0.000 (1.11)	-0.004*** (-5.20)
Manufacturing <sup>a</sup> [dummy]	-0.102*** (-4.09)	-0.144** (-2.53)	-0.088*** (-2.68)	-0.108 (-1.59)
Retail trade <sup>a</sup> [dummy]	-0.067** (-2.54)	-0.447*** (-7.51)	-0.061* (-1.75)	-0.381*** (-5.27)
<b>Interactions with Government</b>				
Bids on government contracts [dummy]			0.339*** (12.27)	0.264*** (4.67)
Has new telephone connection [dummy]			0.159*** (5.67)	-0.006 (-0.10)
Has new electricity connection [dummy]			0.091*** (2.78)	-0.016 (-0.23)
Applied for construction license [dummy]			0.136*** (4.56)	0.047 (0.75)
Applied for import license [dummy]			0.087*** (2.72)	-0.010 (-0.14)
Applied for operating license [dummy]			0.158*** (5.60)	0.069 (1.18)
Has been inspected for taxes [dummy]			0.159*** (6.35)	0.029 (0.51)
Has new water connection [dummy]			0.071* (1.69)	0.107 (1.26)
<b>How manager answers bribe question</b>				
Answered in local currency [dummy]		-3.039*** (-58.25)		-2.841*** (-47.62)
<b>R-Squared/Pseudo R-Squared</b>	0.139	0.523	0.178	0.517

Source: Author's calculations based upon data from the WBES.

<sup>a</sup> Omitted category is other services. \*\*\*, \*\*, \* Statistically Significant at 1%, 5% and 10% significance levels

Note: T-statistics in parentheses.

**Table 2:** Effect of gender of manager on interactions with regulators and other government agencies.

Column	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Dependent Variable</b>	Has got telephone connection	Has got electricity connection	Has got water connection	Has got construction license	Has got import license	Has got operating license	Had tax inspections	Sells to government
<b>Country-Year Dummies</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Observations</b>	27,583	42,699	42,507	42,551	42,517	42,523	42,502	42,437
<b>Gender of manager</b>								
Top manager is female [dummy]	-0.044* (-1.75)	-0.044* (-1.93)	0.009 (0.33)	-0.034 (-1.51)	-0.160*** (-6.00)	0.026 (1.27)	-0.031* (-1.69)	-0.153*** (-7.15)
<b>Firm Characteristics</b>								
Number of workers [nat. log]	0.133*** (18.84)	0.167*** (26.37)	0.162*** (21.25)	0.253*** (39.89)	0.210*** (30.09)	0.148*** (24.12)	0.174*** (31.08)	0.108*** (17.90)
Age of firm [nat. log, years]	-0.129*** (-9.03)	-0.082*** (-6.46)	-0.040** (-2.55)	0.037*** (2.89)	-0.010 (-0.72)	-0.035*** (-2.90)	0.010 (0.90)	0.091*** (7.60)
Firm exports [dummy]	0.059*** (2.66)	-0.029 (-1.48)	-0.026 (-1.07)	0.088*** (4.52)	0.419*** (20.20)	0.016 (0.81)	0.100*** (5.80)	-0.038** (-1.99)
Firm is foreign-owned [dummy]	-0.088*** (-2.83)	-0.109*** (-3.80)	-0.140*** (-3.93)	-0.084*** (-3.04)	0.205*** (7.36)	-0.086*** (-3.14)	-0.012 (-0.47)	-0.158*** (-5.69)
Firm is partly government owner [dummy]	-0.069 (-1.15)	-0.188*** (-3.22)	-0.047 (-0.73)	-0.100* (-1.92)	0.087 (1.49)	0.089* (1.75)	-0.206*** (-4.36)	0.132*** (2.69)
Growth of sales [percent]	0.002*** (7.32)	0.002*** (6.43)	0.001*** (4.38)	0.002*** (7.33)	0.001*** (2.99)	0.000* (1.65)	-0.000 (-0.68)	0.000 (0.82)
Manufacturing <sup>a</sup> [dummy]	-0.212*** (-8.22)	-0.043* (-1.90)	-0.181*** (-6.66)	-0.237*** (-10.75)	0.216*** (7.91)	-0.289*** (-13.67)	-0.116*** (-6.07)	-0.357*** (-17.75)
Retail trade <sup>a</sup> [dummy]	0.054** (1.98)	0.041* (1.72)	-0.006 (-0.20)	-0.098*** (-4.23)	0.445*** (15.58)	-0.102*** (-4.66)	0.058*** (2.88)	-0.344*** (-16.13)
<b>Constant</b>	-1.345*** (-8.69)	-1.711*** (-10.46)	-1.791*** (-10.54)	-1.824*** (-13.11)	-3.350*** (-11.54)	-1.883*** (-10.14)	-0.700*** (-6.19)	-1.737*** (-10.52)
<b>R-Squared/Pseudo R-Squared</b>	0.0970	0.0726	0.0643	0.122	0.186	0.178	0.121	0.0814

Source: Author's calculations based upon data from the WBES.

<sup>a</sup> Omitted category is other services. \*\*\*, \*\*, \* Statistically Significant at 1%, 5% and 10% significance levels

Note: T-statistics in parentheses. All dependent variables are dummy variables and are estimated using Probit estimation.

**Table 3:** Estimated differences in probability of female and male managers interact with government officials

	Male manager	Female manager	Difference
Has got telephone connection in past two years	23.4%	22.2%	-1.2%
Has got electricity connection in past two years	15.0%	14.0%	-0.9%
Has got water connection in past two years	7.2%	7.3%	0.1%
Has got construction license in past two years	16.8%	16.1%	-0.7%
Has got import license in past two years	13.3%	10.7%	-2.6%
Has got operating license in past two years	22.5%	23.1%	0.7%
Had tax inspections in past year	60.4%	59.4%	-1.1%
Has tried to sell to government in past year	20.2%	16.5%	-3.7%

*Source:* Author's calculations based upon data from the World Bank's Enterprise Surveys.

*Note:* Probabilities are calculated by calculating the probability that each firm would interact with the government if they had a male and female manager and then averaging the probabilities over all firms.

**Table 4:** Probability of paying bribes for firms involved and not involved in transaction with government

	Probability of paying bribes		
	Not involved in transaction	Involved in transaction	Difference
Has got telephone connection	15.1%	18.3%	3.3%
Has got electricity connection	15.5%	17.4%	1.9%
Has got water connection	15.7%	17.1%	1.4%
Has got construction license	15.3%	18.1%	2.8%
Has got import license	15.5%	17.3%	1.8%
Has got operating license	15.0%	18.2%	3.2%
Had tax inspections	13.9%	17.0%	3.1%
Sells to government	14.4%	21.7%	7.3%

*Source:* Author's calculations based upon data from the WBES.

*Note:* Probabilities are calculated by calculating the probability that each firm would interact with the government if they had a male and female manager and then averaging the probabilities over all firms.

**Table 5:** Effect on gender on bribe requests during transactions

Column	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>Dependent Variable</b>	Bribes when getting telephone connection	Bribes when getting electricity connection	Bribes when getting water connection	Bribes when getting construction license	Bribes when getting import license	Bribes when getting operating license	Bribes during tax inspections
<b>Country-Year Dummies</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Observations</b>	5,683	5,529	2,271	6,394	4,101	8,344	23,439
<b>Gender of manager</b>							
Top manager is female [dummy]	0.052 (0.60)	-0.164** (-2.33)	0.016 (0.16)	0.003 (0.06)	-0.093 (-1.00)	-0.080 (-1.54)	-0.019 (-0.56)
<b>Firm Characteristics</b>							
Number of workers [nat. log]	-0.070*** (-2.82)	-0.011 (-0.59)	-0.089*** (-3.06)	-0.028* (-1.84)	-0.037 (-1.60)	-0.000 (-0.03)	0.002 (0.23)
Age of firm [nat. log, years]	0.019 (0.37)	-0.011 (-0.30)	0.006 (0.11)	-0.030 (-0.93)	-0.045 (-0.99)	-0.011 (-0.36)	-0.034* (-1.82)
Firm exports [dummy]	-0.024 (-0.31)	0.044 (0.73)	0.249*** (2.67)	0.074 (1.54)	0.219*** (3.19)	0.207*** (4.48)	0.130*** (4.41)
Firm is foreign-owned [dummy]	-0.040 (-0.36)	-0.125 (-1.38)	-0.040 (-0.28)	-0.083 (-1.20)	-0.142* (-1.74)	-0.092 (-1.35)	-0.126*** (-2.95)
Firm is partly government owned [dummy]	-0.239 (-1.02)	-0.130 (-0.75)	-0.063 (-0.28)	-0.039 (-0.31)	-0.363* (-1.82)	-0.228 (-1.64)	-0.087 (-1.02)
Growth of sales [percent]	0.001 (1.21)	-0.001 (-0.85)	-0.000 (-0.41)	0.000 (0.06)	0.000 (0.20)	0.001* (1.86)	-0.000 (-0.40)
Manufacturing [dummy]	-0.043 (-0.50)	-0.008 (-0.11)	-0.043 (-0.41)	-0.029 (-0.52)	-0.194** (-2.06)	0.034 (0.64)	-0.028 (-0.85)
Retail trade [dummy]	-0.118 (-1.31)	0.067 (0.95)	0.036 (0.35)	0.092 (1.62)	-0.105 (-1.06)	0.032 (0.58)	-0.012 (-0.33)
<b>Constant</b>	-0.854*** (-2.84)	-1.350*** (-4.77)	-1.392*** (-3.53)	-1.191*** (-3.07)	-1.348*** (-5.30)	-1.451*** (-4.85)	-2.058*** (-5.12)
<b>R-Squared/Pseudo R-Squared</b>	0.145	0.141	0.139	0.132	0.177	0.116	0.150

Source: Author's calculations based upon data from the WBES.

<sup>a</sup> Omitted category is other services. \*\*\*, \*\*, \* Statistically Significant at 1%, 5% and 10% significance levels

Note: T-statistics in parentheses. All dependent variables are dummy variables and are estimated using Probit estimation

ON-LINE APPENDIX: ADDITIONAL TABLES

**Table 6:** Countries included in analysis

Country	Surveys	Country	Surveys	Country	Surveys
Afghanistan	2008; 2014	Estonia	2008-09; 2013	Nepal	2009; 2013
Albania	2013	Ethiopia	2011	Nicaragua	2010
Angola	2010	FYR Macedonia	2008-09; 2012-13	Niger	2009
Argentina	2010	Gabon	2008	Panama	2010
Armenia	2008-09; 2012-12	Georgia	2008	Paraguay	2010
Azerbaijan	2008-09; 2013	Ghana	2012-14	Peru	2010
Bahamas	2010	Grenada	2010	Philippines	2009-10
Bangladesh	2013	Guatemala	2010	Poland	2008-09; 2013
Barbados	2010	Guyana	2010	Romania	2008; 2012-13
Belarus	2009; 2013	Honduras	2010	Russia	2008-09; 2012
Belize	2010	Hungary	2008-09; 2013	Rwanda	2011
Benin	2009	Indonesia	2009-10	Serbia	2008; 2013
Bolivia	2010	Iraq	2011	Sierra Leone	2008
Bosnia and Herzegovina	2008-09; 2012-13	Cote d'Ivoire	2008-09	Slovak Republic	2008-09; 2013
Botswana	2010	Jamaica	2010	Slovenia	2008-09; 2013
Brazil	2008-09	Jordan	2013-14	Sri Lanka	2011
Bulgaria	2008; 2012-13	Kazakhstan	2008-09; 2013	St Kitts and Nevis	2010
Burkina Faso	2009	Kenya	2013	St Vincent and Grenadines	2010
Cameroon	2009	Kosovo	2008-09; 2013	Suriname	2010
Cabo Verde	2009	Kyrgyz Republic	2008-09; 2013	Tajikistan	2008; 2013-14
Central African Republic	2011	Lao PDR	2012	Tanzania	2013
Chad	2009	Latvia	2008; 2013	Togo	2009
Chile	2010	Lebanon	2013-14	Trinidad and Tobago	2010
China	2012	Lesotho	2008	Turkey	2008; 2013-14
Colombia	2010	Liberia	2008	Uganda	2013
Republic of Congo	2008	Lithuania	2008-09; 2013	Ukraine	2008; 2013
Costa Rica	2010	Madagascar	2008-09; 2013-14	Uruguay	2010
Croatia	2013	Malawi	2009	Uzbekistan	2008; 2013-14
Czech Republic	2008-09	Mali	2010	Venezuela	2010
Democratic Republic of Congo	2010; 2013-14	Mauritius	2008-09	Vietnam	2009
Djibouti	2013	Mexico	2,010	West Bank and Gaza	2013
Dominican Republic	2010	Moldova	2008-09; 2012-13	Yemen	2010
Ecuador	2010	Mongolia	2008-09; 2012-13	Zambia	2012-14
El Salvador	2010	Montenegro	2008-09; 2013	Zimbabwe	2011

**Table 7:** Summary statistics of variables in analysis

		Obs.	Mean	Std. Dev.
<b>Firm Characteristics</b>				
Firm has female manager	Dummy	42830	0.16	0.36
# of fulltime, permanent workers	Natural Log	42830	3.39	1.42
Age of firm	Natural Log	42830	2.69	0.68
Firm is an export	Dummy	42830	0.25	0.43
Firm is majority foreign-owned	Dummy	42830	0.09	0.28
Firm is partly government owned	Dummy	42830	0.02	0.14
Growth of sales over past three years <sup>a</sup>	Formula <sup>a</sup>	42830	3.52	31.55
Manufacturing <sup>b</sup>	Dummy	42830	0.53	0.50
Retail or wholesale trade <sup>b</sup>	Dummy	42830	0.29	0.45
<b>Interactions with government</b>				
Firm has secured or attempted to secure government contract in past year	Dummy	42437	0.20	0.40
Firm has applied for a new fixed-line telephone connection in past two years	Dummy	27627	0.23	0.42
Firm has applied for a new electricity connection in past two years	Dummy	42699	0.15	0.36
Firm has applied for a new water connection in past two years	Dummy	42710	0.07	0.26
Firm has applied for a construction permit in past two years	Dummy	42688	0.17	0.37
Firm has applied for an import license in past two years	Dummy	42517	0.13	0.34
Firm has applied for an operating license in past two years	Dummy	42552	0.23	0.42
Firm has been inspected or visited by tax officials in past year	Dummy	42531	0.60	0.49
<b>Corruption</b>				
Manager says firms like this one need to pay bribes to get things done	Dummy	36200	0.16	0.36
Bribes as percent of sales for 'firm like this one'	Natural Log	5725	0.44	2.11
Bribe requested or expected when getting telephone connection	Dummy	6315	0.05	0.21
Bribe requested or expected when getting electricity connection	Dummy	6102	0.13	0.33
Bribe requested or expected when getting water connection	Dummy	2913	0.11	0.31
Bribe requested or expected when getting construction permit	Dummy	6643	0.20	0.40
Bribe requested or expected when getting import license	Dummy	5175	0.10	0.30
Bribe requested or expected when getting operating license	Dummy	9098	0.13	0.33
Bribe requested or expected during tax inspections	Dummy	24305	0.13	0.33

*Source:* Author's calculation based upon data from the WBES.

*Note:* Number of observations only includes number of observations for which all firm characteristic variables are available.

<sup>a</sup> Following Davis and Haltiwanger (1999), we calculate growth rates using the midpoint between starting years and ending year. This method reduces the influence of outliers. <sup>b</sup> The omitted category is 'other services'

# **Do Economical- or Environmental- Marketing Themes Have More Influence on Consumers' Willingness to Behave Sustainably?**

JOHN CICALA, PH.D.

*College of Business Administration, Texas A&M University – Kingsville  
Kingsville, Texas, USA*

JESUS CARMONA, PH. D.<sup>1</sup>

*College of Business Administration, Texas A&M University – Kingsville  
Kingsville, Texas, USA*

*Most green-oriented marketing campaigns today attempt to persuade consumers of the benefits of engaging in environmentally responsible behavior (ERB). These messages focus on stressing either the ecological or economical benefits of such actions. However, despite the existence of strong supporting arguments for both approaches, very little academic research exists that investigates if one approach is more influential on the likelihood of individual willingness to participate in this socially desired behavior. It is expected that this research will show that communications promoting economic and financial benefits of recycling will have greater influence on consumers' willingness to recycling than will communications promoting its environmental benefits.*

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<sup>1</sup> Address correspondence to Jesús Carmona, Ph.D., Associate Dean and MBA Director, College of Business Administration, Texas A&M University – Kingsville, Kingsville, Texas, USA. E-mail: [Jesus.Carmona@tamuk.edu](mailto:Jesus.Carmona@tamuk.edu)

# **Ethnic Group Differences in Attitudes Toward Pharmaceutical Direct-to-Consumer Advertising**

JYOTSNA MUKHERJI<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*In this study we examined the attitudes and behaviors of Hispanic consumers toward pharmaceutical direct-to-consumer advertising. The main motivations were to understand not only specific behaviors and attitudes but also to investigate if these behaviors are impacted by culture. A sample of 200 consumers filled out the questionnaire. Findings indicate that culture and language use influence conversations with doctors about the drug and the disease. Respondents also reported that DTC advertising motivates them to take better care of their health. The concerns respondents raise are to do with DTC promotions not highlighting the risks associated with the drug. Implications for advertising and public policy are discussed.*

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<sup>1</sup> Address correspondence to Jyotsna Mukherji, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd, Laredo, TX, USA. E-mail: [jyo@tamiu.edu](mailto:jyo@tamiu.edu)



# Country of Origin and Online Promotion in Cross-Border E-Business: A Chinese Consumer Behavior Research for Quality Management<sup>1</sup>

DA HUO<sup>2</sup>

*School of International Trade and Economics, Central University of Finance and Economics  
Haidan District, Beijing, China*

KEN HUNG

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

HAIBO WANG

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*The development of cross-border E-business has encouraged Chinese E-business companies to further enhance their involvement in global competition. This research analyzes the country of origin and online promotional strategy in cross-border E-business, by a study of Chinese on-line consumers in Dual Eleven Sales at Food Division. This research reveals the 2-mode network of items involved in the sales, based on their country of origin, promotional strategies, cultural distances between China and its country of origin. The product attributes are also included in the research, including the price, package, and categories. The systematic cluster analysis is performed to reveal the groups of different products, and the Moran index and Geary index are applied to further analyze the relationship pre-orders of 2015 Dual Eleven Sales and the similarities of products. Also the islands of attributes for food items in the complex network are analyzed. This research finds that a higher closeness of items based on the cultural distance, online promotional strategy, and product attribute in the complex network has a positive relationship with pre-ordering performance during the Dual Eleven Sales. This research can be helpful to global managers and decision makers in cross-cultural management work, and is important for further discussions about the consumer behavior in on-line sales, and makes implications for quality management of cross-border E-business.*

**KEYWORDS** *Country of Origin, Online Promotion, Cross-border E-business, Chinese Consumer Behavior, Quality Management*

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<sup>2</sup> Address correspondence to Da Huo, School of International Trade and Economics, Central University of Finance and Economics, No. 39, South College Road, Haidian District, Beijing, China 100081. Email: [dhuo@cufe.edu.cn](mailto:dhuo@cufe.edu.cn)

# Sustainability Initiatives by MENACA Countries

BALAJI JANAMANCHI<sup>1</sup>

A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA

*The Kyoto Protocol is an agreement amongst countries around the world where-under the countries have not only acknowledged the global warming phenomena but also have committed to focus on reducing greenhouse gas emissions to address global warming. This agreement was the result of approximately 150 years of continuous greenhouse gas emissions mostly by developed countries. The Kyoto protocol was adopted in December, 1997 in Kyoto, Japan and later came into force in February 2005. Currently, there are 192 parties to the protocol. The countries participating in the Kyoto Protocol have created strategies to reduce the levels of emissions from those in the 1990s or in other words have moved towards sustainable practices. The protocol has also been viewed as a signal for multinational corporations (MNCs) and other business organizations to change their operations into green and sustainable operations / initiatives. While developed countries may embrace sustainability as a moral obligation for having abused the natural resources in the past, the developing countries do so not only to protect and preserve the environment but also because they want to sustain their economic growth and resources.*

*The past decade has witnessed a more than fair share of attention given to the Middle East (ME), North Africa (NA) and Central Asia (CA) combined as MENACA countries of the world for multiple reasons by a variety of stakeholders. Many associations and organizations have started taking note of the region and have included it in their scope of activities and mission. This study attempts to understand what notable measures and initiatives, if any, have been undertaken by the MENACA countries over the past decade in response to the Kyoto protocol or otherwise. The study compares and contrasts the initiatives and legislations by the MENACA countries with select countries from the rest of the world to understand the sustainability initiatives status in MENACA countries.*

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<sup>1</sup> Address correspondence to Balaji Janamanchi, Associate Professor of Management, Division of International Business and Technology Studies, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd., Laredo, Texas 78041, USA. E-mail: [bjanamanchi@tamiu.edu](mailto:bjanamanchi@tamiu.edu)

# Corporate Social Responsibility and Business Growth: Collateral Effects on Business and Society

ANDRÉE MARIE LÓPEZ-FERNÁNDEZ<sup>1</sup>  
Universidad Panamericana  
Mexico City, Mexico

*Theorists and organizational leaders have been concerned with their responsibility pertaining society for at least half a century. Corporate social responsibility (CSR) is a strategy as organizations display efforts to take part in the social sphere as conscientious parties. CSR involves a series of strategic actions carried out with stakeholder active participation to minimize negative effects and maximize positive outcomes for both business and society, despite the products and/or services a firm may provide. It implies achieving competitive advantage by aligning societies' interests with organizational performance by engaging in activities indirectly associated with firms' core business operations (López-Fernández & Rajagopal, 2013).*

*In order to effectively create positive collateral effects on business and society, organizations should converge CSR strategies with business growth strategies. The general objective of the study was to explore various factors associated with the dynamics of CSR leading to business growth of the firm and social development and growth. Findings suggested that the relationship between CSR and business growth is also cyclical. CSR absolutely impacts firms' value and goals, sales and profit, and brand positioning. And, firms' societal performance indeed positively impacts education, health, poverty and hunger, empowerment, the environment, and fair trade. Stakeholders are considerably knowledgeable in CSR, and consider it to be an important trait that adds value, can alter purchase decision making, switch behavior, and is a strong motivator for stakeholder word-of-mouth via social networking sites.*

*Many have come to believe, almost by diktat, that CSR is accomplished when any action or set of actions are employed which aim to improve or aid society. The truth is that such belief has plagued organizations with undeserved titles which, furthermore, demean the overall purpose and effects of CSR. We are regrettably living in a disturbing world, where extreme poverty and hunger, lack of health, and a deteriorating environment, are distressing humankind and the globe. Providing sustained growth and development for both business and society will aid in the reduction and elimination of such deplorable conditions. It then becomes plausible that firms' proactivity to engage in CSR can absolutely assist in the eradication of extreme poverty and hunger, illnesses, enhance health and the environment's conditions and empower the generations to come. CSR is, then, a strong, solid, strategy that enables firms to be agents of change, and with a little vision, enter a new realm in which stakeholders are considered as all those living and not just those with current purchasing power.*

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<sup>1</sup> Address correspondence to Andrée Marie López-Fernández, Universidad Panamericana, Calle Augusto Rodin 498, Benito Juárez, Insurgentes Mixcoac, 03920 Ciudad de México, D.F., Mexico. E-mail: [andreemlf@gmail.com](mailto:andreemlf@gmail.com)

# Consumers Contribute to the Depredation of Endangered Species: Motivations and Ethical Issues

ARTURO Z. VASQUEZ-PARRAGA<sup>1</sup>

*The University of Texas Rio Grande Valley  
Edinburg, Texas, USA*

SERGIO E. ROBLES-AVILA

*The University of Texas Rio Grande Valley  
Edinburg, Texas, USA*

NGOC CINDY PHAM

*The University of Texas Rio Grande Valley  
Edinburg, Texas, USA*

*Knowingly or unknowingly, many consumers (users and buyers) contribute to the depredation of endangered species by buying, selling, giving or accepting products (e.g., ivory tusks, rhino horns, leopard skins, and shark fin) that result from the over-exploitation of animal bodies in the verge of extermination. The trend of such practices seems to be increasing around the world and involves both illegal and illicit behavior. This research focuses on the motivations and ethical orientation of such consumers, and attempts to answer the following research questions: 1) what are the motivations consumers have to acquire (buy, sell, give or accept) products that are made of parts or the skin of endangered species? 2) What is the ethical orientation of such consumers, including both ethical judgment and ethical decision making?*

*Relevant theories and methodologies to address both questions are applied to empirical research performed in two countries, the U.S. and Vietnam. Results reveal that most consumers judge such practices as dangerous for the survival of endangered species, but feel compel to acquire such products for hedonic and utilitarian motives.*

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<sup>1</sup> Address correspondence to Arturo Z. Vasquez-Parraga, The University of Texas-Rio Grande Valley, 1201 W. University Dr., Edinburg, Texas 78539, USA. E-mail: [arturo.vasquez@utrgv.edu](mailto:arturo.vasquez@utrgv.edu)

# **Is the Relationship between the Supply and Use of Financial Aid Different between Public, Private, and Liberal Arts Colleges?**

J. A. CONNELL<sup>1</sup>

*Stephens College of Business, University of Montevallo  
Montevallo, Alabama, USA*

*A 2015 staff report from the Federal Reserve Bank of New York examined the relationship between credit supply and college tuition. Their findings suggest approximately 65% of an increase in available student credit results in tuition increases. This manuscript tests the relationship between credit supply and college tuition using a cross-sectional dataset with a structural equation model. Preliminary results support the theory that available student credit is related to higher costs of a college education. The dataset is then divided into public, private, and liberal arts colleges and multi-group analysis is used to test the differences between the three data subsets.*

**KEYWORDS** *Partial Least Squares, Structural Equation Modeling, Multi-Group Analysis, Higher Education*

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<sup>1</sup> Address correspondence to J. A. (Jim) Connell, Associate Professor of Business, Station 6551, Stephens College of Business, University of Montevallo, 75 College Drive, Montevallo, Alabama 35115, USA.  
E-mail: [jimconn@bellsouth.net](mailto:jimconn@bellsouth.net)

# Understanding the Information Privacy and Disclosure in Social Networking Sites within European Context

FARUK ARSLAN<sup>1</sup>

*School of Science and Computer Engineering, University of Houston-Clear Lake  
Houston, Texas, USA*

KALLOL K. BAGCHI

*College Of Business Administration, The University of Texas at El Paso  
El Paso, Texas, USA*

*European Court of Justice's recent judgment to invalidate the 15 year-old Safe Harbor agreement with United States of America and continuing discussion of approaches such as Open Personal Data Services (OpenPDS) to address the privacy concerns of individuals on a global basis, necessitate a broader and deeper understanding of information privacy phenomenon using large-N comparisons. In this study, we use a research model based on a multi-theory framework and PLS method, to test a series of hypotheses regarding the antecedents of information privacy concern and actual disclosure among social network site users within the context of European Union and its cultural heritage regions. Specifically, we seek to understand how institutional trust affects social network site users' information privacy concerns and explore how privacy calculus, perceived control, and users' information privacy concerns affect the actual information disclosure. The results of our study reveal both converging and diverging patterns across the EU's six cultural heritage regions. Given its rich multi-country sample and generalizable conclusions, this study addresses a unique gap in the information privacy literature.*

**KEYWORDS** *Information Privacy, Social Networking Sites, European Union, Partial Least Squares*

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<sup>1</sup> Address correspondence to Faruk Arslan, Assistant Professor of Computer Information Systems, School of Science and Computer Engineering, University of Houston-Clear Lake, 2700 Bay Area Boulevard, Delta 228, Mailbox 40, Houston, Texas 77058-1002, USA. E-mail: [arslan@uhcl.edu](mailto:arslan@uhcl.edu)

## **Cultivating Innovation: Keep Checking your Social Networking Site**

MURAD MOQBEL<sup>1</sup>

*University of Kansas Medical Center  
Kansas City, Kansas, USA*

VALERIE BARTELT

*College of Business Administration, Texas A&M University – Kingsville  
Kingsville, Texas, USA*

*Innovative performance has become increasingly essential for businesses' success. In this research, we compare how social capital is delivered through an internal social networking site (SNS). Drawing on the three dimensions of social capital theory – including the relational ('virtual coffee break'), cognitive ('virtual lifeline'), and structural ('virtual fluidity') social capital dimensions – we build and test two models positing how each dimension of social capital is leveraged through different types of employees' SNS use to determine which cultivates innovative performance. Partial least squares structural equation modeling was employed to test the models empirically. Our research, based on 276 surveys completed by employees in a major information technology corporation, found cognitive capital and the interaction of structural and relational capital to significantly improve innovative performance – a link that, to our knowledge, has not been empirically tested in a sole business' internal SNS. In particular, although cognitive and the interaction of structural and relational capital significantly increased innovative performance, relational and structural capital variables did not solely affect innovative performance. Structural capital significantly moderated the effect of relational capital on innovative performance, but did not moderate the effect of cognitive capital on innovative performance. Our research model, including the interaction terms and the three independent variables – social, relational, and structural – explained 20 percent of the variance in innovative performance. These findings open new avenues for further research by identifying the type of SNS use that cultivates innovation in businesses. According to this research, the 'virtual lifeline' use (i.e. by means of cognitive capital) and the interaction/combination of 'virtual fluidity' use (i.e. by means of structural capital) and the 'virtual coffee break' use (i.e., by means of relational capital) of SNS are more effective for facilitating innovative performance among employees than the mere 'virtual coffee break' use (i.e. by means of relational capital). Managers should create guidelines for internal SNS use that establishes a knowledge-sharing atmosphere if innovative performance is desired. Additionally, these findings identified a need for future research to determine the inter-relationship of the three dimensions of social capital.*

**KEYWORDS** *social networking sites, innovative performance, innovation, social capital theory, social exchange theory, structural capital, cognitive capital, PLS.*

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<sup>1</sup> Address correspondence to Murad Moqbel, Health Information Management/Center for Health Informatics, University of Kansas Medical Center, Mailstop 2008, 3901 Rainbow Boulevard, Kansas City, Kansas 66160, USA. Email: [mmoqbel@kumc.edu](mailto:mmoqbel@kumc.edu)



# **Análisis de la infraestructura de seguridad pública y ecológica para afrentar las necesidades de la Cuenca de Burgos en la ciudad de Nuevo Laredo**

LIC. FRANCISCO MAGDALENO RAMÍREZ, MBA  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

ING. JOSÉ FERNANDO HERNÁNDEZ GONZÁLEZ, MC<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

DR. VÍCTOR MANUEL RUBALCAVA DOMÍNGUEZ  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

DR. FERNANDO HERNÁNDEZ CONTRERAS  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*Se realizó un análisis de las necesidades para afrontar un proyecto de tan elevado impacto en la región como lo es la Cuenca de Burgos, el análisis se llevó a cabo por medio del método “focus group” donde se cita expertos nacionales e internacionales en diversos trabajos en seguridad y protección al Ambiente, en la extracción del hidrocarburo determinando así las necesidades en Infraestructura de Seguridad Pública (Bomberos y Protección Civil) e Infraestructura ecológica con las que la ciudad de Nuevo Laredo no cuenta en la actualidad. Este análisis aporta las necesidades en infraestructura y capacitación necesarias para el proyecto.*

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<sup>1</sup> Address correspondence to Ing. José Fernando Hernández González MC, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. E-mail: [Word110@hotmail.com](mailto:Word110@hotmail.com)



# **El calibre del régimen legal e institucional de protección de las áreas naturales protegidas**

LIC. DANIEL CRUZ RODRÍGUEZ  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

MTRA. VIOLETA MANGIN GUIXERAS  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

MTRA. MAYRA GARCÍA GOVEA<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*La institucionales y de política ambiental. Esta investigación analiza los retos, oportunidades de mejora y posibles soluciones. La principal problemática se deriva de la falta de recursos financieros y capacidad técnica. Ante esta problemática, el día de hoy, los esfuerzos gubernamentales por mejorarla resultan ser inefectivos. Aparte de reforma a las instituciones ambientales, es urgentemente requerido poner en la mesa de negociaciones y planeación gubernamental el tema de las especies invasoras. Adicionalmente recursos tienen que ser inyectados a la conservación de los recursos naturales en México. Problemática concerniente a la conservación de la Biodiversidad biológica en México encuentra retos legislativos, falta de capacidades y ausencia de planeación a largo plazo.*

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<sup>1</sup> Address correspondence to Mtra. Mayra García Govea, Facultad de Comercio Administración y Ciencias Sociales, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. Email: [gargov@hotmail.com](mailto:gargov@hotmail.com)

# Conservación a las áreas naturales protegidas en México

DR. JUAN ANTONIO HERRERA IZAGUIRRE<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

DR. RAMÓN VENTURA ROQUE HERNÁNDEZ  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

MTRO. ADÁN LÓPEZ MENDOZA  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*Recientemente la preocupación por la protección de la Biodiversidad ha tomado importancia entre académicos, científicos y la población en general. Esta preocupación ha llevado a la comunidad internacional a la creación de acuerdos internacionales, instituciones especializadas y la creación de Áreas Naturales Protegidas. En México esta figura es regulada por la Ley General del Equilibrio Ecológico y la Protección al Ambiente y su Reglamento. La problemática en las ANPs estriba en la falta de monitoreo, recursos financieros y requerimientos técnicos en la Ley para la creación de las citadas áreas. Los autores proponen reformas legislativas urgentes, capacitación de personal y asignación de recursos humanos para resolver esta problemática.*

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<sup>1</sup> Address correspondence to Dr. Juan Antonio Herrera Izaguirre, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. Email: [derechointernacional@hotmail.com](mailto:derechointernacional@hotmail.com)

# **Cambio climático: educación ambiental y tecnologías verdes para afrontarlo**

ING. DAVID DE LEÓN FLORES<sup>1</sup>  
*Universidad Tecnológica de Nuevo Laredo  
Nuevo Laredo, Tamaulipas, México*

*En las últimas décadas, el cambio climático ha sido de los temas más discutidos entre académicos, científicos y tomadores de decisiones por su impacto. Esfuerzos internacionales incluyen Acuerdos globales para afrontar este fenómeno y recientemente la utilización de tecnologías verdes o sustentables (Fuentealba, 2011:31). Este fenómeno representa a nivel global una amenaza considerable. La problemática de éste fenómeno estriba en que existe un aumento de temperatura considerable por el aumento de gases de efectos invernaderos (Cuevas, 2014:76), derivado de toda actividad humana que afecta los ecosistemas y el medio ambiente de forma directa o indirecta (SEMARNAT, 2009:2), dañando la calidad del desarrollo de la vida. Para afrontar este fenómeno el autor propone la utilización de tecnología verde para realizar actividades sin dañar el ecosistema, y la implementación y seguimiento de una educación ambiental para que sea la base de un desarrollo sustentable (Piñango, 2015:4)*

**PALABRAS CLAVES**      *Educación ambiental, Tecnologías verdes, México, reciclaje, renovable, sustentable, cambio climático*

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<sup>1</sup> Address correspondence to David De León Flores, Ingeniero Eléctrico, Catedrático, Universidad Tecnológica de Nuevo Laredo, Boulevard Universidad 3302 Fraccionamiento Oradel 88205, Nuevo Laredo, Tamaulipas, México. E-mail: [daviddeleonf@outlook.com](mailto:daviddeleonf@outlook.com)

# **Propuesta de mejora continua: planeación de cadena de suministro**

ING. GABRIELA AZENETH GARCÍA MARTÍNEZ<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*Esta investigación se centra alrededor de la cadena de suministros debido a la importancia de esta actividad en el comercio global (Baca, Gabriel, 2014:77). Analiza la mejora continua, planeación y la cadena de suministros, esta investigación identifica la falta de continuidad y eficiencia en la entrega de mercancías de un lugar a otro. Esta investigación propone la eficiencia en la cadena de suministros a través de aplicar una mejora continua por medio de herramientas, métodos y técnicas en la planificación de la cadena de suministro, para mejora y solucionar la problemática planteada.*

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<sup>1</sup> Address correspondence to Ing. Gabriela Azeneth García Martínez, Division de Estudios de Posgrado e Investigación, Administración y Ciencias Sociales de Nuevo Laredo, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. E-mail: [gaby-9102@hotmail.com](mailto:gaby-9102@hotmail.com)

# **BYOD ventajas y desventajas ¿Hay un entorno legal para su implementación?**

ING. MARÍA DEL ROCÍO GARCÍA MARTÍNEZ<sup>1</sup>  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

LIC. JESUS ARTURO RODRÍGUEZ NARVÁEZ  
*Universidad Autónoma de Tamaulipas  
Nuevo Laredo, Tamaulipas, México*

*Este artículo presenta los resultados de un proyecto de investigación orientado a comprender la tendencia BYOD por sus siglas en inglés, (Bring Your Own Device) que se traduce Traiga Su Propio Dispositivo al trabajo, al ámbito educativo, al sector de la salud con desventajas serias y ventajas dignas de analizar tanto para la empresa como para el empleado, de aprovechar esta práctica en México ¿se contara con las disposiciones legales para regular este nuevo vínculo en la relación Obrero- Patrón que garanticen la implementación de un ambiente BYOD?*

*PALABRAS CLAVE      BYOD, Dispositivo Electrónico, Ley federal del trabajo, Empresas, México*

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<sup>1</sup> Address Correspondence to Ing. Maria del Rocio Garcia Martinez, Universidad Autónoma de Tamaulipas, Nuevo Laredo, Tamaulipas, México. Email: [rociog@yahoo.com](mailto:rociog@yahoo.com)

# **Analysis on Hazardous Material Transportation Incidents for 10 Years**

KUMARAGURU NEYVELI MAHALINGAM

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

NAVEEN KUMAR DUDDALA<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*This paper analyses the incident trends for past 10 years using PHMSA data across USA by all modes of transportation. Highway, Air, Railways, Water, and Pipelines are the following modes of hazardous material transportation considered for analysis. Loading, Unloading, In Transit and In Transit Storage are transportation phases consider for further analysis under transportation mode Highway, Air, Railway, and Water. From 2005 to 2015 about 139,332 incidents took place by Highway mode, 14,255 incidents took place by Air mode, 6,797 incidents took place by railway mode, 693 incidents took place by water and 7,034 incidents took place by Pipeline. Co-relation analysis is performed between each mode of transportation against Injuries, Fatalities and Damages to identify the relations.*

**KEYWORDS**     *Hazardous Material, Transportation Mode, Transportation Phase, Co-relation*

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<sup>1</sup> Address correspondence to Naveen Kumar Duddala, Graduate Student, Management Information Systems, A.R. Sanchez, Jr. School of Business, Texas A&M International University, Laredo, Texas, USA.  
E-mail: [naveenkumarduddala@dusty.tamiu.edu](mailto:naveenkumarduddala@dusty.tamiu.edu)

# Predictive Analysis on Border Crossing

ABHISHEK REDDY REDDYVARI<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

MURALI KRISHNA BANDARU

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

VINAY KUMAR REDDY YERRAVALLI

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

THARUN KUMAR APPANI

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*The purpose of this study is to characterize the trends and also will design a comprehensive data aggregation and analysis system to provide a clear picture and to distinguish the hot spots of border security by making use of complex network model in the border region to present a transportation infrastructure. Using Geographic Information System based frame work data from FEMA HAZUS. The Public service level and the economic development in the border region will be collected from US Customs and Border Protection and other government agencies<sup>2</sup>.*

*All the relational data collected will be combined on both time and space dimensions and analyzed by using big data tools and models developed in this study. For example, a new difference-in-difference regression<sup>3</sup> and estimation model will be designed for evaluation casual relationships of border security. In this project tools and methods include XML schema and R software. Data will be presented in more meaningful form using data visualization techniques<sup>4</sup>. And also examine the issue of missing data and errors, then apply an imputation technique. The result will represent a new complex model to calculate the efficiency of border crossing and identify the hot spots of border crossing.*

**KEYWORDS** *border security, big data analytics, complex system analysis, difference-in-difference estimation*

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<sup>1</sup> Address correspondence to Abhishek Reddy Reddyvari, A.R Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd, Laredo, TX 78041, USA.

E-mail: [abhishekreddy\\_red1@dustytamiu.onmicrosoft.com](mailto:abhishekreddy_red1@dustytamiu.onmicrosoft.com)

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# Blockchain and Data Analysis

MOHAN KRISHNA GANGARAPU<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

CHAITANYA TANGELLAMUDI

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

ABHISHEK REDDY REDDYVARI

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

SAI THEJA KANDERI

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*Blockchain to put it simple is a public ledger of each and every Bitcoin transaction that have taken place until the very movement<sup>2</sup>. The Blockchain is made up of blocks placed one upon the other starting from the bottom to the top, each block represents one Bitcoin transaction<sup>3</sup>. Each new block refers to the previous block through the “previous block hash” which is generated by SHA256 cryptographic hash algorithm on the header of the block. This creates a chain between all the blocks, thus the name Blockchain. The users known as Minors creates the blocks.*

*The verified block data cannot be altered or edited later which makes Blockchain safe and secure. All the transactions are public and the code used is open to view online, this makes it even more secure. The most important characteristic of Bitcoin and Blockchain is it is decentralizes which means no single agency or corporation controls Bitcoin network. We tried to retrieve the data, study and analysis it to the maximum and tried to give some interpretations and conclusions which will be presented in the conference.*

## REFERENCES

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<sup>1</sup> Address correspondence to Mohan Krishna Gangarapu, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd, Laredo, Texas 78041, USA. E-mail: [mohankrish93@gmail.com](mailto:mohankrish93@gmail.com)

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# Emerging Markets Multinationals

SHASHANK KUMAR SILVERI<sup>1</sup>

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

VINAY KUMAR REDDY YERRAVALLI

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

PARVATEESH GUTTI

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

THARUN RAHUL MECHINENI

*A.R. Sanchez, Jr. School of Business, Texas A&M International University  
Laredo, Texas, USA*

*Emerging Market multinationals is coined by the economists in 1981. Towards the 20<sup>th</sup> century, the conceptual study of global markets suggests the shift of economic power from multinationals in world's richest countries to companies in Asian and African countries. This paper studies the opportunities and resources in emerging markets and how the companies from developing countries are overcoming the hurdles presented by rich countries in terms of infrastructure and technology. The geographical advantage, natural resources and more foreign direct investments into these developing countries have proven to play a major role in their most profitable business strategy.*

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<sup>1</sup> Address correspondence to Shashank Kumar Silveri, A.R. Sanchez, Jr. School of Business, Texas A&M International University, 5201 University Blvd, Laredo, TX 78041, USA.  
E-mail: [shashankkumarsilveri@dustytamiu.onmicrosoft.com](mailto:shashankkumarsilveri@dustytamiu.onmicrosoft.com)

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**Texas A&M International University  
A.R. Sanchez, Jr. School of Business  
Center for the Study of Western Hemispheric Trade  
5201 University Boulevard  
Laredo, TX 78041  
(956) 326-2820  
[freetrade.tamiu.edu](http://freetrade.tamiu.edu)**

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